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THE Journal of Tropical Medicine

EDITED BY JAMES CANTLIE, M.B., F.R.C.S., AND W. J. SIMPSON, M.D., F.R.C.P.
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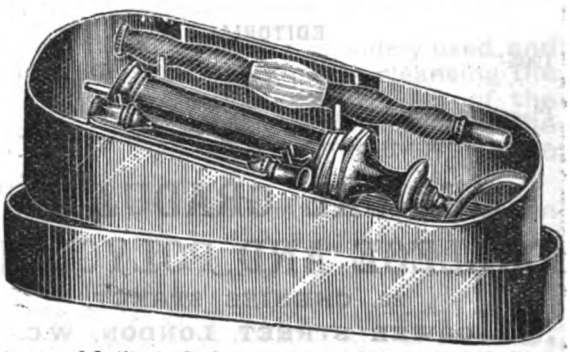
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NOTES ON "CLIMATIC" BUBO.

By F. H. A. Clayton, M.D., M.R.C.P.Edin.
Staff-Surgeon, R. N.

[Forwarded for publication by the Director-General, Medical Department, Admiralty.]

The etiology of this affection is still so much a matter of speculation that the following cases and differential blood counts may perhaps be worth recording, more especially in view of the evidence recently brought forward by Mr. Cantlie[1] in favour of his theory that it is allied to plague and is the true pestis minor. I do not remember any previous notes on the condition of the blood.

Case 1.—G. S., aged 26, stoker. Originally placed on sick list on June 14th, at Wei-hai-Wei, with a bubo in the right groin, for which no cause was apparent in the area of skin drained, nor in the penis, while no light was thrown on the case by his medical history. His temperature had not at first been taken, but on July 8th, three weeks later, was 99·4°, though there was no sign of suppuration. Gland at first tender, but on June 14th was smaller and less so, while on the 18th it again enlarged, without, however, any appearance of inflammation. July 11th, placed on arsenic, with almost immediate effect. On the 23rd the swelling was slowly subsiding, the glands having almost disappeared and only the swollen tissues around left, as if there were some lymphatic obstruction; and on the 26th he was sent to light duty. On August 25th he returned with a small burn of the hand. One gland still remained enlarged, but gave no trouble, and the surrounding swelling had to some extent passed off. He now, however, had a small patch of dhobie itch in the perineum, more especially on the left side, and, on questioning, said that he had had it at intervals since leaving England, and that one gland was palpable even then. This eruption was not even visible when the bubo arose. I first saw the case on July 8th, at which time there was no sign of eruption or other visible cause, and the glands, which were the horizontal set, were hard, matted, not tender, and showing no points of softening. There were no filariæ in his blood.

Blood.—He was very white-faced and anæmic-looking, but I had no means of measuring the hæmoglobin at the time. On August 7th no leucocytosis was present, and on August 27th the red cells numbered 4,125,700 and the white cells 9,000.

Differential Count.

Date.	Neutrophiles.	Eosinophiles.	Lymphocytes.	Large mononuclear.
	Per cent.	Per cent.	Per cent.	Per cent.
August 7th	44	22	29	5
„ 27th	46·4	18·7	27·7	7·2

In view of the eosinophilia his motions were examined for evidence of parasites, but none were present.

It is seen that in this case a quiescent focus of irritation was present, and that there was a change in the white cells, the eosinophiles being decidedly increased at the expense of the neutrophiles, while the mononuclear elements also showed slight relative increase. The next two cases are included for comparison as being indolent chronic buboes occurring without obvious cause, although neither patient was particularly anæmic, nor had they any febrile symptoms.

Case 2.—J. B., aged 31, 1st class, petty officer, was placed on sick list at Hong Kong on February 18th, with three enlarged glands in right groin, each the size of a hazel-nut, painless and not tender. No obvious active cause, but there was some brown pigmentation of skin over the inside of the thighs, latent dhobie itch, of which he gave a history of eight to ten years. He was given arsenic and a shot-bag applied, and by March 4th the glands were decidedly smaller and giving no trouble, and he went to duty. On April 2nd he returned again, however, when they were found to have suppurated in a leisurely, chronic sort of way, and the bubo was incised. Cover-glass preparations of the pus showed no organisms. On April 10th he returned to duty.

Blood Examination.

Date.	Red cells.	White cells.
February 23rd	4,920,000	29,600

Differential Count on February 23.

Neutrophiles.	Eosinophiles.	Lymphocytes.	Intermediate.	Large mononuclear.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
70·5	·7	21·5	2·4	4

3 myelocytes and 1 mast-cell seen; 561 cells counted.

In this case there also seemed to be a latent source of irritation.

Case 3.—W. J. aged 26, 1st class petty officer, was put on sick list on July 5th, at Wei-hai-Wei, with two horizontal glands enlarged in the right groin. There was a doubtful history of a strain which had apparently been the exciting cause of a similar enlargement lasting six days in 1898. The glands were at first tender but then became less so, and hard and brawny, and by the 13th had suppurated in an indolent way, and pus was evacuated. The bubo rapidly healed, and he went to duty on the 22nd.

Blood Examination.

Date	Red cells.	White cells.
July 11th	4,340,000	16,330.

Differential Count, July 13th. 697 counted.

Neutrophiles.	Eosinophiles.	Lymphocytes.	Intermediate.	Large mononuclear
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
65	5	21	1	9

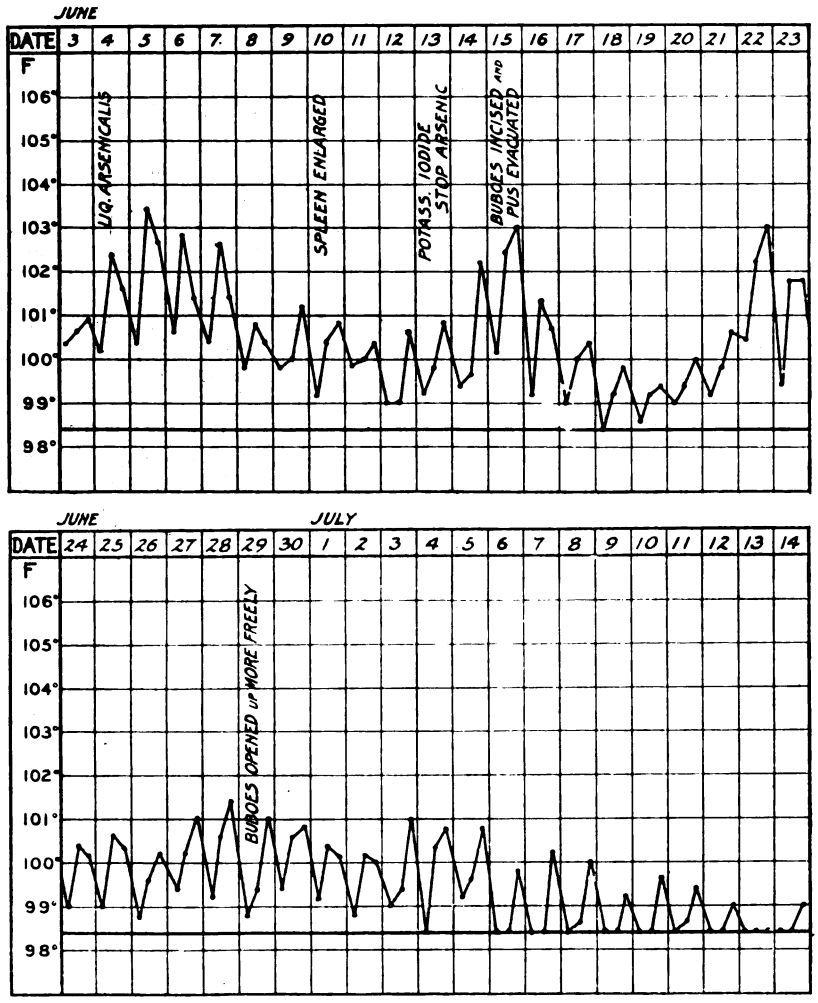
Case 4.—A. P. aged 29, stoker, came on the list at Hong Kong on June 3rd, when a good many cases of plague were occurring. He had the horizontal glands in both groins enlarged, those on the left side being decidedly tender, and those on the right hard. The only possible source of irritation was some indurated papules on the thighs, the remains of a severe attack of furunculosis the previous year. None of them, however, showed any signs of activity. His temperature was raised, but he was perfectly comfortable, his tongue was clean, his pulse quiet, and he looked well, and showed no very marked anæmia. His urine was strongly acid, but otherwise showed no abnormality. He was placed upon arsenic.

Several blood films were taken on the 3rd, 7th, and 12th, and stained for plague bacilli, in accordance with

Dr. Bell's adaptation of Ross's method for malaria, but no organisms were seen. Other films, however, taken at night on the 9th, on the possibility of the case being filarial in origin, and therefore with less precaution as to sterilisation of the skin, &c., showed no filariæ, but contained some cocci and epithelial cells, usually in relation. On the 10th the spleen was found to be decidedly enlarged, and the glandular swellings were increasing in size, and becoming more tender, though with no definite indication of suppuration. On the 6th, and again on the 11th, with the most rigid precautions as regards sterilisation, a hypodermic syringe was introduced into the substance of the left gland, a small quantity of thin whitish fluid drawn off and inoculated into broth on the first occasion, and on agar on the second. These were inoculated at about 37° C., but no growth resulted. A film was also made on the second occasion and stained, but no organisms could be seen. On the 15th both glands were freely incised, and a tube of agar inoculated from the pus, which was periglandular and ordinary in appearance, again with negative results. Temperature 103° that night. On the 17th he complained of severe neuralgic pain over the splenic region, which lasted for a day or two. A serum test was made with *M. melitensis* emulsion, in dilutions of 20 and 100, but without result, and on account of the eosinophilia his motions were searched, but no ova were present, although what was apparently the larva of some fly with fourteen rows of bristles and an alimentary tube was seen on one occasion.

Blood Examination.

Date	Number of red cells	Number of white cells	Hæmoglobin	Neutrophiles	Eosinophiles	Lymphocytes	Intermediate	Large mononuclear	Number counted
			Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
June 3rd..	—	—	—	53	19	20	2·8	4	348
,, 7th..	5,000,000	6,100	—	—	—	—	—	—	—
,, 10th..	—	—	—	54	16·8	19	1	4·5	327
,, 24th..	4,146,000	8,500	90	68·9	12·8	13	·3	4	274
August 1st	—	—	—	61	12·4	19	1·2	5·5	377
,, 29th	4,550,000	8,500	80	56·5	13·2	24·2	·6	4·9	529



Subsequent History.—By the end of June he had become very haggard and anæmic-looking, and had lost considerably in weight. The buboes required freer incision. During July they began to improve without, however, a corresponding alteration in bodily condition. By the beginning of August they had healed, and during this month he gained weight, and was sent to light duty on the 31st. He is now (October) quite well again.

In this case also, therefore, a previous cause for grandular irritation existed, and once again eosinophilia was marked.

What then is the cause of these buboes?

Venereal disease can be definitely excluded in all of them, and so can any active source of irritation in the area drained, although in no less than three there were the remains of what had been foci of irritation, at the time, however, quiescent.

I believe this to have had some part in determining the localisation of the adenitis, but by itself it was quite incapable of causing the condition. Nor does the course of the cases suggest a local infection as a cause; they do not of necessity suppurate, and when this does occur it is in an indolent manner and without pain or marked inflammation.

Mr. Cantlie for a long time has stated that he believes these to be really cases of pestis minor and allied to true plague, and has recently, in conjunction with Professor Hewlett,[1] described a case in which an organism was isolated from within the gland which apparently corresponds with one isolated by Kitasato in cases of plague, and also by Professors Simpson and Cobb in cases of bubo in Calcutta before true plague appeared.

In previously described cases of climatic bubo, how-

ever, the pus seems to have been sterile, and in Case 4, although I do not pretend that the bacteriological examination was anything but superficial, it would at least suggest that no readily cultivated organism was present. One would expect, too, that with the spleen enlarged, the organism would, like that of plague, be found in the blood by Bell's method, if the disease were a general one caused by an organism resembling that of plague, yet repeated examination showed no sign of it.

One of the most powerful arguments against the pestis minor theory is the fact, pointed out long ago by Inspector-General Godding,[3] that East Africa, and particularly Zanzibar, is the headquarters for these buboes, at all events, in the Navy. I can fully confirm the statement that they are met with frequently at Zanzibar from my own experience. Nevertheless no epidemic of true plague has followed them there as far as I know, unlike Calcutta and Hong Kong, and notwithstanding their constant occurrence. The rarity of true plague in the Navy, although "climatic bubo" is comparatively frequent, is perhaps an argument in a like direction.

I see that Mr. Cantlie is inclined to doubt the occurrence of true plague in Central Africa, as described by Koch and others, but I should have thought that the presence of an endemic focus in such close communication with Zanzibar and East Africa would rather favour his theory.

With regard to the blood, I have been unable to find any record of examination in pestis minor, but in true plague, Aoyama (Cabot)[4] appears to have found marked leucocytosis and also marked diminution of eosinophiles, or exactly the reverse of what was present in my two cases of "climatic bubo."

Although the percentage of eosinophiles varies without definite cause in health, there is in these two so marked and persistent an increase that it suggests a connection between the two conditions, and it is to be presumed that there is circulating in the body some toxin which acts chemotactically on these cells. Another case of chronic enlargement of cervical glands of undetermined nature and which had occurred previously when in a warm climate, also showed eosinophilia, though not quite so marked. A blood count is appended.

Blood Count.

Date	Number of red cells	Number of white cells	Hæmoglobin	Neutrophiles	Eosinophiles	Lymphocytes	Intermediate	Large mononuclear	Mast	Number counted
			Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per c'nt.	Per c'nt.
Nov. 24	4,586,000	11,200	—	57	8	21	5	7·6	—	458
Dec. 12	4,800,000	18,200	—	51	13	20·7	7·6	7·2	—	512
Jan. 4	4,400,000	10,000	75	53	5·4	30	1·6	9·5	—	565
Feb. 15	5,060,000	45,000	90	50·8	11·9	31·8	1·3	2·9	·9	503

Horder[5] and others state that the eosinophiles are slightly increased in Europeans in the Tropics. This increase is very slight, and in a good many counts I cannot say that I have found much evidence of it, although I have found them increased in natives, probably from the presence of parasites. Nor do the records of blood counts made in other tropical countries that I have seen point in this direction either. I do not think, therefore, that it can be explained in this way. According to Professor Muir[6] the non-granular cells are those chiefly attracted in chronic or subacute conditions, and the eosinophiles by special chemotactic substances in relatively non-acute conditions, whereas in acute bacterial infections it is, *par excellence*, the finely granular cells which react. What is definitely known about eosinophiles bears this out, and in a large proportion of cases it results from some chemical substance circulating, such as that produced in helminthiasis. The condition of the blood in these two climatic buboes suggests, therefore, that if due to an organism it is one of comparatively mild degree of virulence, and that it is quite possibly produced by some circulating toxin, whether or not originally manufactured by bacteria. It is of interest to note that Dr. Gilman Moorhead,[7] while experimenting on rabbits, produced eosinophilia and glandular enlargement by the injection of a chemical substance in the shape of an alcoholic extract of leukæmic glands. The anæmia and debility which not infrequently precede by some time the formation of a "climatic bubo," and the pyrexia, which is not necessarily dependant on the formation of pus, would also suggest the possibility of this, and if such were the case, the localisation of the enlargement might readily be determined by some previous irritation or trauma. This would explain the common involvement of the inguinal glands, although there seems no reason why other glands should not at times be involved.

Finally, although positive bacteriological evidence is valuable, it is needless to say that isolation of even a definite organism does not prove that it is the cause of the condition. This is particularly the case with lymphatic glands, taking into consideration their function as filters, and it is obvious that enlarged and congested glands would afford unusually favourable opportunities for the development of organisms passing into them.

REFERENCES.

[1] Cantlie and Hewlett in report of Pathological Society of London, April 19th, 1904, in *British Medical Journal*. Cantlie in JOURNAL OF TROPICAL MEDICINE, August 15th, 1904.
[2] *Ibid.*
[3] *British Medical Journal*, September, 1896, and June, 1897.
[4] "Clinical Examination of the Blood."
[5] JOURNAL OF TROPICAL MEDICINE, September, 1901, and September, 1902.
[6] *British Medical Journal*, September 10th, 1904.
[7] *Ibid.*

Filariasis.

Röntgen Rays in Filariasis.—Drs. J. R. McDill and W. B. Wherry have treated patients suffering from *Filaria nocturna* in Manila by administering large doses of quinine, and then exposing the patient to X-rays, with the idea of killing the parent worm. So far the results have not been encouraging. Wherry claims to have seen a flagellum attached to the filarial embryo.

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JANUARY 2, 1905.

1905.

THE JOURNAL OF TROPICAL MEDICINE commences to-day the eighth volume. We have from time to time asked for the opinions and advice of our readers as to the management of the Journal, and we have been favoured by some valuable suggestions, upon which we have acted in almost every instance. We would again solicit our contributors and subscribers for advice, and we can assure them of a favourable hearing. It is hoped to increase the size of the Journal during the year, for our columns are all too limited to set forth fully the increased and increasing literature which appertains to tropical medicine. It is with some regret, however, that we contemplate increasing the size of the Journal. The busy practitioner has not time, nor has he, after a hard day's work in a tropical climate, the energy to wade through the voluminous pages and the heterogeneous mass of material contained in our large standard journals, which deal with general and often irrelevant matters.

The promise to keep the Journal as small as possible in our first issues was welcomed by many readers, partly on account of the time required to master the contents, and partly on account of the difficulty of conveying books of large size in journeying from one station to another, or from one continent to another. Most medical men are made regretfully conscious how often the wrapper of the larger medical journal remains intact, owing to various causes, but perhaps the most frequent cause is the size of the journal they are expected to get through. We can, we believe, pride ourselves in the belief that the JOURNAL OF TROPICAL MEDICINE is at least always looked at, and many subscribers have assured us that they find the Journal interesting from beginning to end. It is our endeavour to make it so, but perfection is a long way off, and we are quite conscious of numerous and radical shortcomings. The Journal is what those interested in the special department it deals with choose to make it, and although editors can guide and formulate a plan of issue, the importance of the Journal depends upon the value of the contributions. We look, therefore, to those who are interested in tropical medicine to take up the advancement of their Journal as a personal matter. We have had several imitators, each encroaching on the special sphere the Journal deals with, but we take these imitations as acknowledgements of our success, and of the necessity for our existence.

During the past year the "discovery-rate" in tropical medicine has been well maintained, and 1904 will be remembered as the period in which the importance of the Leishman-Donovan body has been prominently brought forward and recognised. Our knowledge of plague has been advanced perhaps more than any other of our better known diseases, by Dr. William Hunter, of Hong Kong. The observation of Dr. John Bell, of Hong Kong, that gastro-intestinal signs and symptoms precede not only the appearance of bubo but also those of fever in plague is an important one; and when to that is added Dr. Hunter's discovery of bacilli in the peripheral

blood in plague before the typical symptoms develop, we find it necessary to recast our ideas concerning plague, and to recognise it from the first onset as a septicæmic disease. Hitherto we have looked upon the general septicæmic state as a late development in the disease, and that the bubo in some indefinite way was an entity in the part it played; now we know that plague is primarily a septicæmic ailment, and that the bubo, the pneumonia, and the many and various lesions which occur in the course of the illness, are mere expressions of a pathological state due to a specific form of septicæmia.

The year 1905 is pregnant with many possibilities as regards tropical medicine. The creation of two lectureships, one in Protozoology, another in Helminthology, by the London School of Tropical Medicine, is a new and important feature, not only in the teaching of tropical medicine, but in the equipment of medical schools in Great Britain. The several scientific expeditions being sent out to Africa and to South America by the Liverpool School of Tropical Medicine leads us to hope that many obscure points in tropical pathology will be cleared up. Knowing the spirit that prevails in these, the two pioneer schools of tropical medicine of the world, we have every confidence that they will in the future, as in the past, succeed in maintaining the high position which this country has gained in the sphere of research in tropical pathology.

PLAGUE—RATS AND FLEAS.

Captain W. Glen Liston, I.M.S., in a paper read before the Natural History Society, Bombay, stated that the *Mus rattus* is the common rat of Bombay and the East generally, that it lives in the roof of houses and even in trees, and that it is from this rat, in all probability, that man becomes infected with plague. The *Mus decumanus*, the common rat of Europe, is a burrowing rodent living in drains and cellars, and man is not so liable to be infected thereby. Both species are liable to plague, but the habits of the former bring the animal more intimately in contact with man. The disappearance of plague in Europe was coincident with the invasion of that continent by the brown rat and the displacement of the black rat.

Fleas on biting man suck blood, and in their stomachs the plague bacilli finds blood in which they can live and thrive. The rat flea is seldom found on man; but on the sudden migration of rats in consequence of an unusual mortality amongst them, they leave their fleas behind them, and these fleas, from sheer hunger, attack man and other animals.

Translation.

THE DEVELOPMENT OF HERPETOMONAS, A FLAGELLATE RELATED TO THE TRYPANOSOMA.

(Preliminary Communication.)

By S. Prowazek (Rovigno).

[Reprinted from *Arbeiten aus den Kaiserlichen Gesundheitsamte*, Part III., Vol. xx.]

(*Translated from the German by P. Falcke.*)

A minute examination of the *Herpetomonas muscæ-domesticæ*, Burnett, in the house-fly, and of a new very nearly related species from *Sarcophaga*, Meg., the flesh-fly (sp. *S. hæmorrhoidalis*, Fall.), which I shall term *Herpetomonas sarcophagæ*, n. sp., led to the discovery that these forms are intimately related to the trypanosoma, and that they form the root of a complicated phylogenetic series, of which the trypanosoma are branches, though without relinquishing the primary important characteristics.

This fact coincides with the original historical development of the flies, inasmuch as these are to be traced from blood-sucking diptera, the parasites of which divide their cycle of development between the host and at least one intermediary host. According to the investigations of Fr. Brauer,[1] the orthorraphean nemocera, the gnats, culicidæ, psychodidæ, and in the older tertiary the brachycerous orthorrhaphæ, the leptidæ, tabanidæ and stratiomyidæ first appear mesozoically, and the eumyidæ (muscariæ) only appear later on.

In this sense the observation that the rat trypanosomes as well as the nagana parasites do not die off immediately in the intestinal tract of the house-fly, but continue to live for some time, and may even go on multiplying by longitudinal division, is exceedingly interesting, and is also suggestive of the possibility that various flies may incidentally become passive carriers of the blood trypanosomes.[2]

in order to comprehend the existence of herpetomonas,

Before considering the biology of the flagellata, and a description of the intestinal tract of the house-fly, which bears a certain resemblance to that of its relative, the tsetse-fly, is here given (fig. 1).

The fore-gut of the fly consists of the short pharynx and the long, muscular, chitinous œsophagus (*os*), into which, by means of a long narrow tract, the large sucking stomach (*vs*) provided with transverse anastomising muscles discharges. A part of the masses of food is retained in the sucking stomach; it is

[1] Fr. Brauer, "Ueber die Verbindungslieder zwischen den orthorrhaphen und cyclorrhaphen Dipteren, &c.," *Verhandl. der Zool.-Bot. Gesellschaft*, 1890, p. 273.

[2] As yet I have discovered no flagellate parasites in the stomoxys of Rovigno, which mostly had asses' blood in the intestinal canal.

mostly filled with a yellowish malodorous fluid, in which disc-shaped crystals and a few yeast fungus cells occur. The so-called proventricle (*pv*) is found at the point of transition of the œsophagus into the mid-gut. It is a sort of dilated annular fold, which Weissman was the first to describe as an intussusception of the fore-gut into the mid gut. Against it, somewhat like a wreath, run strong tracheal ramifica-

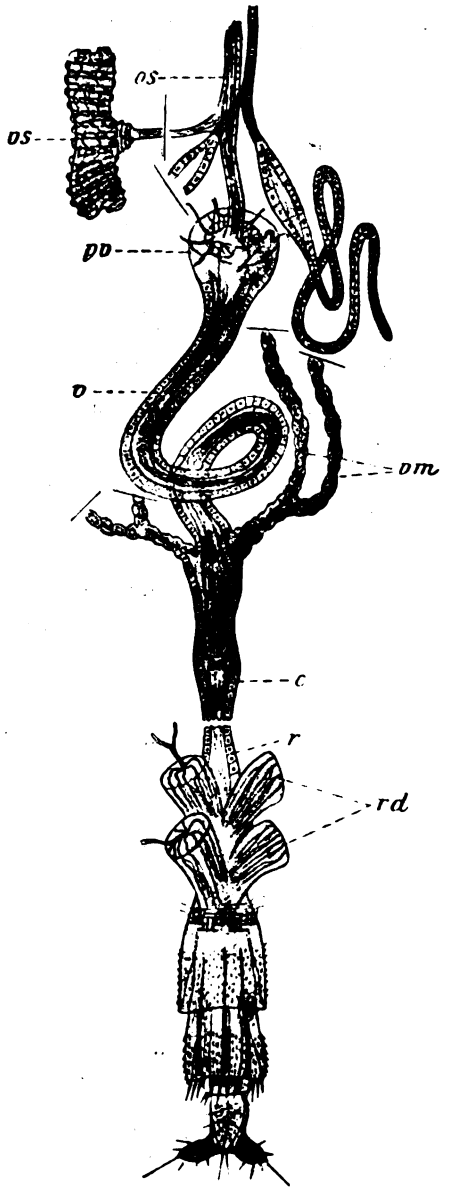


FIG. 1.

tions, which on its globular surface further divide into more (about twelve) branches. The mid-gut (*v*) is represented by a long spiral tube, which is somewhat more slender in the middle, and which is invested with high epithelial polygonal-rod border cells. By the abdominal cavity they are clothed with a thin bordering lamella or basal membrane, as well as with an internal and external layer of muscle. The intestinal epithelium is exposed to a periodical process of desquamation, whereby, according to Biedermann, digestive enzyma are set free. The cells to be desquamated are pressed forward, club-like, from the rest of the epithelium and become brown under the effects of autolytic processes. A similar discoloration sets in during the autumn, first in the nuclei of the salivary glands of flies that are dying off, and which subsequently attacks all the cells. The food does not come into direct contact with the intestinal cells, but is enclosed in a chitinous, liquid tubular membrane which commences at the proventricle, and is termed a funnel by A. Schneider. It is always partly extruded with the masses of fæcal matter, and is continually being regenerated. Morphologically, the limit of the mid-gut has not yet been firmly established; it is mostly taken as extending to the so-called Malpighian tubes, which are implanted as filamentous diverticuli of the proctodeum (*vm*).

The flies possess two very long Malpighian tubes on each side, originating from a moderately long contractile tract of the intestine. The large dilated cells of the tubes alternate with one another, being partly filled with yellowish concretions which resemble uric acid, partly with light-refracting granules with vacuoles. The small intestine is short, and near the colon (*c*) is shut off by a sort of annular fold. The epithelium here is very low, and within is very chitinous and grooved. The sphincter of the intestinal tract is formed by the rectum (*r*), which is considerably dilated, and which possesses four thimble-like rectal glands (*rd*), which, according to Weisman and Leydig, are not glands at all. Near by these there are strong bundles of trachea, which may be compared to certain tracheal gills that are occasionally found in a few larvæ of libellulæ, which likewise here serve as laminated organs for respiration. Judging from experiments with solution of litmus, it is found that the anterior part of the intestinal tract, especially the anterior part of the mid-gut, has an acid reaction. This action, which has been proved by means of a series of experiments under various conditions of food, coincides with the most recent reports of Biedermann.

Yeast fungus-like cells in variable quantities are found in the intestine of nearly all the flies; these cells are elongated or spindle-shaped, they resemble the fungi of the *apiculatus*, and have a cycle of development like the entomophtera. They have a cell nucleus and a metachromatic granule. Division ensues by means of asymmetrical budding. In the autumn, particularly, they sprout out to long tubes with several close-lying nuclei; they are club-like at the ends, where they carry a penicellular fan of ovoid cells. Azygospora, which presumably originated from auto-copulation, were also observed.

The observation that the house-flies carry on their legs *Tyroglyphus*, Megnin, *Chelifer cancroides*, Richters, and various acari and ants, is biologically interesting.

THE DEVELOPMENT OF HERPETOMONAS MUSCÆ-DOMESTICÆ (BURNETT).

This flagellate is 30 to 50 μ in length. The body, the best description of which has been furnished by Stein,[1] is somewhat lancet-like, and inclines to a

[1] F. R. v. Stein, "Der Organismus der Infusiontiere." Leipzig. Published by Engelmann, 1878; revised by L. Léger,

point at its posterior extremity, and in a few cases is slightly twisted. The cellular body is surrounded by a kind of delicate cuticle (periplast) which, when the creature is exposed to pressure, by means of which the entoplasm is squeezed out, remains revealed as a delicate sheath which stains red (Giemsa's method).

The protoplasm has a dense alveolar structure and contains micro-granules, and sometimes larger granulations, which may be stained a reddish-violet (after Giemsa). A vacuole is mostly distinguishable in the anterior part of the creature. This sometimes disappears, showing that it is undoubtedly engaged in slow pulsation. The flagellate possesses two nuclei (fig. 2,*a*), one that hypothetically seems connected with nutrition and which lies about the middle of the body, and a second close nucleus near the place

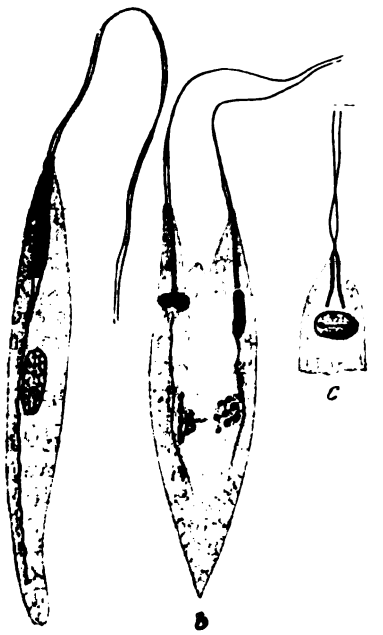


FIG. 2.

of origin of the flagellum, which, as in the trypanosoma, I shall term blepharoplast, and which probably plays a part in locomotion and the functions connected therewith. The first-named nucleus is mostly oval and carries a granular chromatic substance over an indistinct alveolar achromatic framework.

In most cases a somewhat irregular karyosoma or interior body is formed in the nucleus; sometimes, however, it dissolves entirely and becomes invisible. The second close blepharoplast, which stains dark, is either oval or kidney-shaped, rarely roundish; in a specimen suitably compressed, one is able to convince oneself that it also possesses a delicate nuclear structure, for centrally an interior body is thus revealed and at the periphery a thick chromatic coating is observable (fig. 2,*c*).

(*To be continued.*)

"Sur quelques cercomonadines nouvelles ou peu connues parasites &c.," *Archiv f. Protistenkunde*, 1903, vol. ii., No. 2, p. 181.

A RESEARCH INTO EPIDEMIC AND EPIZOOTIC PLAGUE.

By WILLIAM HUNTER, M.B. C.M., Aberd.

Government Bacteriologist, Hong Kong.

WHETHER regarded from a clinical, pathological, or bacteriological standpoint, we have had no more lucid, no more important contribution to the literature of plague since the disease was first investigated in Hong Kong in 1894. Dr. Hunter's report is published by the Government of Hong Kong in the form of a blue book, and extends to 107 pages, with numerous charts and tables.

In a preface by the principal civil medical officer, Dr. J. M. Atkinson, attention is called to the principal features of Dr. Hunter's researches, but it will be found that a careful perusal of the report will amply repay everyone interested in plague, and will induce even the most conservative amongst us to alter our opinion as to the true nature of plague.

The Symptom Complex of Plague.—Attention is drawn under this title to the tendency of medical practitioners to regard the fever and the bubo as the starting point of the illness and to neglect the exact mode of onset of the affection. Before the bubo appears, before even feverish symptoms develop, careful enquiry elicits the presence of vomiting and diarrhœa and sundry other evidences of constitutional upset in cases of plague.

The Gastro-intestinal Tract in Plague.—Hitherto affections of the stomach and intestine have been but little considered in the symptomatology of plague, but the observations of Dr. Bell, of the Government Civil Hospital, Hong Kong, has brought the fact to light that gastro-intestinal troubles frequently, if not almost always, precede the more commonly recognised symptoms of plague. Several cases are mentioned, and referred to in some detail in Dr. Hunter's report, which were admitted to hospital suffering from severe diarrhœa, from diarrhœa and vomiting, or from colic, and in whom fever subsequently developed, and a severe form of plague ran its course.

From these and other cases it is evident that diarrhœa and vomiting are among the early symptoms of plague. The patient at this stage may be going about his daily duties, and although some headache and a feeling of sleepiness may be present, there is no increase of temperature until later on. Primary gastro-intestinal symptoms point to the alimentary canal as the most likely channel by which the plague bacillus enters the human body, and a large part of Dr. Hunter's report is devoted to the proof of this idea. *Post-mortem* evidence goes to corroborate the fact that the plague virus causes marked lesions of the alimentary tract. The mucous membrane of the mouth, pharynx and œsophagus shows congestion, hyperæmia, œdema, and occasionally hæmorrhagic extravasations. The changes in the stomach consist chiefly of hyperæmia, petechiæ or hæmorrhages of considerable size, and minute ulcerations in all probability due to foci of hæmorrhages. The small intestine presents changes similar to those described in the stomach, but they are more pronounced. Peyer's patches and the solitary follicles become

swollen and are occasionally the seat of hæmorrhage; the intestinal walls are thickened and œdematous, and the peritoneal covering is hyperæmic and of a bright red or dark reddish-blue colour. The large intestine, from the cæcum to the rectum, shows similar lesions to those met with in the stomach and small intestine. The liver is increased in size and weight, the spleen pancreas and suprarenals are congested, and petechiæ, hyperæmia and hæmorrhagic extravasations may be present in each and all.

The evidence that the mucous membrane of the alimentary canal is the seat of primary changes in plague would seem to be conclusive, both clinical and *post-mortem* evidence bearing out the contention.

Plague a Septicæmic Disease ab initio.—There can be no doubt that the presence of a bubo in plague has thwarted our endeavour to arrive at a right understanding of the disease. The idea seems to prevail that throughout the disease the bacilli are pent up in the bubo, that the affection becomes septicæmic just before death, and that if recovery takes place it is because the bacilli never reach the blood. Dr. Bell has shown us that we must set aside this conception of plague once and for all, and he is amply confirmed by Dr. Hunter in his conclusions. Examining the blood of plague patients, after the manner suggested by Ross in malaria, Bell has shown that in the initial stages of plague the specific bacilli of the disease are present in the peripheral blood. The organisms are frequently present in the blood previous to the development of a bubo. With these facts before us, the conclusion seems justified that bubonic plague is in reality septicæmic plague in which the organism reaches the general circulation to begin with, multiplies there, producing the symptoms of the disease, and that the actual bubonic manifestation is an altogether secondary development.

The Bacillus present during Convalescence.—The presence of the bacillus more or less constantly in the blood in plague, from the earliest manifestation of the disease, throughout the illness, and to a late period in convalescence, still further suggests the septicæmic nature of the ailment. The continuance of the bacilli in the blood, and for an indefinite period after the acute attack is over, is a factor of prime importance in the pathology and epidemiology of plague. The power of infectivity of a person suffering from plague would seem thereby probable for an indefinite period, and suggests the possibility of a resting stage in man.

Varieties of Plague of Insignificant Importance.—From the above statements it will be readily understood that the usual divisions of plague into three typical types and into several minor sub-types are of quite secondary importance. Plague is a septicæmic disease, and the bubonic, pneumonic and septicæmic forms of the disease are due to idiosyncrasies of the individual or to the virulence of the infection. The disease is caused by the *Bacillus pestis* in the blood-stream, where it can multiply, and the septicæmia may remain as such, or may be accompanied by bubonic swellings, or by secondary pneumonic changes. Hunter, however, is of opinion that there probably exists another type of the disease, namely, the *primary* pneumonic form caused by direct inhalation of a virulent bacillus. This inhalation disease is apparently something different from all other varieties.

Skin Eruptions in Plague.

Papules, vesicles, or pustules are frequently met with in plague, and the lesions may actually be of such a size as to resemble boils or carbuncles. The skin eruption usually appears first as small reddish or brown spots, accompanied by a burning sensation. The spot becomes indurated and congestive; a vesicle appears containing plague bacilli in numbers; the contents of the vesicle become invaded by ordinary cutaneous micro-organisms, and the contents become pustular. Hunter regards these skin eruptions as evidences of local growth of the *Bacillus pestis*, similar to that found in enteric fever where the typhoid rash is the result of focal multiplication of typhoid bacilli. These vesicles and pustules have nothing to do with the point of entry of the infection, and are further evidence of blood infection, and support the septicæmic nature of plague. That such eruptions may occasionally represent the point of inoculation of the plague virus, Hunter, however, does not deny, and cites a case as proof of such a contingency. Yet although at the point of entrance of the virus through the skin wound a vesicle forms which contains plague bacilli, it in no way differs from contemporaneous vesicles, which develops elsewhere in the body. The bubo which forms in this case is certainly a secondary development due to the general septicæmic condition and not the result of local lymphangitis leading from the wound to the gland. That the mode of infection through the skin is common is by no means likely. Lymphangitis extending from the wound to the nearest gland is very rarely observable, and this fact is made a special note of by many investigators; it has been regarded as a special phenomenon peculiar to plague. The explanation of the relationship between the local infection and the bubo, however, is not so simple as formerly supposed, for Dr. Hunter claims that the bubo is for the most part due to the blood infection set up by the bacillus, and not to the lymphatic tracts extending from the wound to the bubo. That infection by the skin is common, and that it obtains naturally is by no means obvious; it is usually impossible to find any evidence whatever of a point of inoculation through the skin. The bubo, moreover, is usually developed in and around the lymphatic glands which are not in direct connection with the area of skin through which the infection is supposed to have occurred. It is the deep and not the superficial glands which are usually affected in buboes, and more often than not it is the iliac lymphatic glands that are primarily and most seriously affected. The fact that lymphangitis is observable when accidental wounds of the skin occur during *post-mortem* examinations on plague cases, as in the case of Aoyama in 1894, recorded by Lawson, and in the case mentioned in the report by Hunter, is in favour of the belief that plague seldom reaches the body by way of skin wounds and infection, otherwise lymphangitis would be a much more common phenomenon in plague than it is. A *post-mortem* wound without the presence of plague bacilli in the infecting material induces lymphangitis; and although in the plague inoculations due to wounds made at a *post mortem* lymphangitis may follow, there is no evidence to show that the presence of the plague bacilli had anything to do with the lymphatic inflammation.

The Spread of Plague Infection by Insects.

Hunter writes that if an insect comes into contact with micro-organisms of an infectious nature, the latter may be deposited either on the surface of the body of the insect or gain the alimentary canal of the insect. He examined many insects to determine whether plague bacilli were present on the surface of the insects, with the following results:—

Flies.—A large number of flies were collected at the Public Mortuary and the Infectious Diseases Hospital, and at least 75 per cent. of the flies showed the presence of plague bacilli on their bodies. There was no apparent increase of death-rate amongst flies during the epidemics of plague, so that the *B. pestis* on the surfaces of their bodies did not affect their life.

The bacteriological examination of these insects was conducted in the following way. The flies on being caught were soaked in sterile normal saline or in bouillon. From this plate cultivations were made. The results were usually verified by animal experiment. Again, in other cases the flies were broken up in similar solutions and the routine methods proceeded with. The results obtained after washing the body surface of the fly were only occasionally positive. Those obtained from the crushed insect were highly satisfactory. One must remember that it is possible to obtain a negative result from the washings of the body surface, but a positive result from the contents of the alimentary canal and *vice versâ*.

It is probable these flies may convey plague on their backs, so to speak, for some considerable distance. Sugar, proved to be free of plague bacilli, introduced into sterilised test tubes containing plague-infected flies, was found to contain plague bacilli when tested experimentally. This experiment is of importance from the view of the possibility of the conveyance of plague by food contaminated by flies.

Mosquitoes.—Culex mosquitoes never showed plague bacilli on their bodies or limbs.

Pediculi also gave negative results.

Bugs were found to harbour plague bacilli on the surface of their bodies.

Cockroaches (*Blatta orientalis*) would appear to play an important *role* in plague-infected districts, and extreme danger exists when these insects can gain access to plague-infected places; and further, in all probability food-stuffs are frequently plague-infected by contact with cockroaches on or in which plague bacilli are present.

Plague Bacilli in the Intestines of Insects.

The evidence is very strong that infectious material may be widely disseminated in nature through the excrement of insects. Hunter found the *Bacillus pestis* in the alimentary canal and fæces of *flies*. These bacilli were found to be virulent and set up typical plague in artificially inoculated animals, *e.g.*, the rat. Similar positive results were also obtained with *bugs and spiders*, and a few *cockroaches*. These experiments show the possibility of food, cooking utensils, fruit, &c., becoming contaminated with plague bacilli and proving thereby infectious to man. The virulence of the virus infecting the insect requires further investigation. In the case of *flies*, however, plague bacilli would appear to pass through their intestines uninjured; but in the case of *bugs* and *fleas* the virulence of the bacilli would appear to be lowered during the passage.

The Mechanism of Infection.

(1) *Suctorial Insects.*

Mosquitoes appear to play no part in the transmission of plague by their bites.

Fleas.—The general results obtained by direct observation and experiment go to show that fleas play an unimportant *role* in the direct spread of plague. Professor Simpson, in 1902, obtained negative results when testing the power of fleas to procure the infection of healthy rats and monkeys by plague-infected rat fleas; the general experience of other observers also bears out this conclusion.

Bugs (*Cimex lectularis*) have been held responsible for the spread of plague by their bites, but the evidence is not of a convincing nature, and all statements of their positive influence in this respect must be received with caution.

Pediculi do not appear to play a part in the spread of plague.

(2) *Non-suctorial Insects.*

Flies and cockroaches, &c., may gather plague bacilli from human excretions, from the excretions of other animals, or from infected articles, and subsequently transport these germs, either in or upon their bodies, to any object on which they may alight.

The Infection of Food by Insects.

Hunter's observations go to prove that the infection of food by insects would appear to be a commoner mode of the spread of the disease than is generally believed. Food, such as rice, may be infected by cockroaches, and plague bacilli have actually been recovered from rice, and it is not impossible some connection may exist between the infection of rice and cockroaches. Food may also become infected through other agencies, namely, contact with plague-infected material of varied nature and the secretions and excretions of plague-infected men and animals. According to Hunter, the infection of food and household utensils would appear to be the most important *role* played by insects in the spread of plague.

Colonial Medical Reports.

British Guiana.

Report of Surgeon-General Joseph Edward Godfrey, M.B., C.M.Edin., for the Year 1903-1904.

Abstract.

The Report of the Medical Department from April 1st, 1903, to March 31st, 1904, was issued from the Surgeon-General's Office, Georgetown, Demerara, on September 6th, 1904.

Population of British Guiana, 300,748.

Health of the Colony.

A.—Death-rate.

The death-rate of the whole Colony was 28·9 per thousand, and the birth-rate 29·3 per thousand, the births exceeding the deaths by 14.

The death-rate for the city of Georgetown and its environs, exclusive of the country patients at the public hospital, was 44·1 per thousand.

The high death-rate of Georgetown points to the existence of some special cause or causes why the death-rate of the city should be so much greater than that of the Colony generally.

I attribute the causes to the following:—

(1) The insanitary condition and excessive overcrowding, chiefly amongst the lower and poorer class; this means deficient ventilation and light, and the unfortunates who have to breathe the vitiated atmosphere contract all sorts of diseases.

(2) Tuberculosis is accountable for 13·9 per cent. of the total deaths, and as the percentage of deaths from this disease for the whole Colony is only 8 per cent., it proves conclusively that the excess of this disease is largely due to overcrowding.

(3) Excessive infantile mortality; 22·8 per cent. of the total mortality was due to children under one year of age, and 29·1 per cent. to children under five years of age.

(4) Want of a proper way of disposal of sewage. The city is in parts saturated with sewage due to the existence of cesspits, which are always a standing danger to the inhabitants, and one of the factors tending to a high death-rate by inducing bowel complaints.

B.—Infantile Mortality.

The returns of the Registrar-General for the year 1903 reveal a most appalling mortality amongst infants. The mortality of children under one year of age to every thousand children born was for the whole Colony 205. There can only be one conclusion, and that is the infantile mortality for the whole Colony is excessive (in England it ranges from 130 to 140 for every thousand births), but for the city of Georgetown it is appalling.

The time has certainly arrived for active steps to be taken to reduce this terrible loss of infant life.

I am convinced that no progress can be made in reducing the mortality until we adopt some measures similar to those practised in Great Britain and other countries, and mothers and others having the charge of young infants realise that milk is the proper food, and not the so-called pap and other abominations on which the helpless babe is fed.

C.—Small-pox Epidemic.

I regret to say that during the year small-pox, fortunately of a comparatively mild type, prevailed throughout the Colony. The disease was introduced here from Trinidad.

In order to give every inhabitant of the Colony the chance of being vaccinated, every medical practitioner was appointed a public vaccinator. In the outlying districts, where the services of a medical man could not be obtained, competent persons were appointed.

In only a few isolated instances did the disease appear on the sugar estates, where the inhabitants were chiefly East Indian coolies. When it did it was always in unvaccinated persons, and did not spread. This was due to the fact that the persons afflicted were properly isolated, and also that the coolies are well protected by vaccination.

Vaccination was made compulsory for all "contacts."

The Isolation Hospital was closed on March 31st, 1904, the last case having been discharged on February 27th, 1904.

There were in all 1,821 cases of small-pox reported, of which 1,434 were treated at the Isolation Hospital.

There were 14 deaths, which is equivalent to a death-rate of quite 7 per cent.

D.—Malarial Fever.

Malarial fever has been prevalent throughout the whole Colony. Now that it has been conclusively proved that malarial fever is caused by the presence in the blood of the malarial parasite known as the *Plasmodium malariæ*, and that this parasite is introduced by a species of mosquito called the *Anopheles*, every endeavour should be made to guard against this disease.

The methods that have been most successful up to the present are:—

(*a*) The taking of small doses of quinine.

(*b*) The filling-up or draining of stagnant pools of water in which the Anopheles breed.

(*c*) The prevention of inoculation by Anopheles by the use of mosquito nets.

If everyone would fill up, in the grounds round their residences, all places where stagnant water can accumulate we should considerably reduce the number of these mosquitos by abolishing their breeding grounds; vats should be enclosed with mosquito-proof wire netting. The larvæ are often to be found in vases and other ornaments used for flowers in the house. A few drops of kerosine oil would kill them.

E.—Ankylostomiasis.

The presence of this disease, due to an intestinal worm (the *Ankylostoma duodenale*), is now generally recognised. This disease has been and is still being introduced into the Colony by East Indian immigrants. That it is on the increase admits of no doubt.

It is hardly too much to say that this parasite causes more harm than all the other intestinal parasites put together, and it is a well-established fact that persons suffering from this disease are liable to be carried off by comparatively slight ailments, the whole system being so debilitated and undermined.

It is especially prevalent amongst the East Indian immigrants, and I am convinced the estates are yearly losing a considerable amount of labour by it.

Mode of Infection.—It is spread through the agency of dejecta of people suffering from this disease, the embryos finding their way into the human alimentary canal either by muddy water or in the mud or dirt adhering to the hands or food receptacles of the workmen. They may also be introduced through the skin, and in my opinion and that of several of the medical officers who have closely studied the subject, the disease known in this colony as "ground itch" is due to the irritation caused by the embryos working their way through the skin. Persons who work in contaminated fields and trenches are the principal sufferers from "ground itch."

It is therefore essential to prevent fæcal contamination of the soil and water by the depositing of fæces

about huts and fields. This can best be done by the establishment of latrines of a simple kind, and suited to native habits. I am convinced that we shall never make any marked progress in stamping out this disease until this is done.

F.—Tuberculosis.

This disease, according to the returns at my command, has been the cause of 8 per cent. of the total mortality of the Colony for the year, but there are strong grounds for believing that the mortality is higher than this. That pulmonary tuberculosis is on the increase, especially in the city, is beyond doubt. The mortality in Georgetown from this disease was 13·9 per cent.

G.—Diarrhœa and Dysentery.

These diseases were prevalent throughout the year, and accounted for 12 per cent. of the total mortality. They are largely due to insanitary surroundings, unwholesome food, and the want of good drinking water.

Expenditure.

The publication of the expenditure of the Medical Department is interesting for medical officers in other Colonies for purposes of comparison. The medical staff consisted of 37 officers, distributed as follows: Administrative Officers, 2; Institution Officers, 11; Institution and District Officers, 3; District Medical Officers, 13; Subsidised District Medical Officers, 5; Relief Roster Officers, 2; Vacancy, 1.

The following table shows the total expenditure in dollars (American) of the Medical Department of the Colony for the year 1903-04:—

Salaries	Surgeon-General ..	$5,280 00
	Medical Inspector ..	4,319 99
	Medical Officers ..	109,770 80
	Special Medical Officers	6,360 00
	Staff-Surg.-Gen.'s Office	3,074 83
Travelling expenses, &c.	Surgeon-General ..	66 94
	Medical Inspector ..	635 08
	Medical Officers ..	9,867 23
Stationery and Messenger, Surgeon-General's Office		380 86
Hospitals		92,804 91
Asylums		73,043 13
*Epidemic of Small-pox, Isolation Hospital and Certificates		7,485 48
*Vaccination		35,456 13
†*Post-mortem* Fees		3,800 00
Allowances, Medical Superintendent, Leper Asylum (in lieu of private practice and personal) ..		700 00
Resident Surgeon, Public Hospital, Berbice (house allowance and in lieu of private practice and personal)		876 00
Dispensaries in Districts, including Moruca		2,695 09
Nurse-Midwives in Districts		82 42
Medicines for Poor in Rural Districts		374 45
		$364,076 34
Amounts paid into Treasury:—		
Hospitals and Asylums		$11,311 49
Dispensaries		437 82
Certificates, Nurse-Midwives		50 00
Lymph disposed of to Private Medical Practitioners		20 80
		$11,820 11
Nett Expenditure		$352,256 23.

* Extraordinary expenditure due to Small-pox epidemic.

† Charged to administration of Justice.

British Guiana Public Hospitals.

Diseases	Cases	Deaths
General.		
Alcoholism	14	—
Anæmia	249	1
Beri-beri	1	—
Blackwater Fever ..	—	—
Chicken-pox	19	—
Cholera	—	—
Choleraic Diarrhœa ..	—	—
Diphtheria	4	3
Debility	162	29
Delirium Tremens ..	—	—
Dengue	—	—
Diabetes	6	1
Dysentery	513	137
Enteric Fever	—	—
Erysipelas	18	5
Febricula	19	—
Gonorrhœa	272	—
Influenza	219	2
Leprosy	82	4
Malarial Fever—		
(*a*) Intermittent ..	2,552	45
(*b*) Remittent ..	360	13
(*c*) Pernicious R. ..	41	31
Malarial Cachexia ..	76	3
Marasmus	37	33
Measles	—	—
Mumps	—	—
New Growths—		
Non-malignant ..	93	2
Malignant	105	27
Plague	—	—
Pyæmia	—	—
Rheumatism	578	—
Rheumatic Fever	—	—
Rheumatoid Arthritis ..	—	—
Scurvy	—	—
Scarlet Fever	66	61
Septicæmia	—	—
Sloughing Phagedæna ..	—	—
Small-pox	45	—
Syphilis—		
(*a*) Primary	21	4
(*b*) Secondary ..	335	10
(*c*) Tertiary	22	12
(*d*) Congenital ..	272	—
Tetanus	23	17
Tubercle	91	30
Whooping Cough	26	—
Yaws	20	—
Yellow Fever	—	—
Other Cases	212	—
	6,181	489
Local.		
Diseases of the—		
Cellular Tissue ..	677	
Circulatory System ..	172	51
Digestive System ..	1,713	187
Ear	20	—
Eye	282	—
Generative System—		
Male Organs ..	530	3
Female Organs ..	14,45	43
Lymphatic System ..	99	2
Urinary System ..	903	272
Nervous System ..	514	53
Organs of Locomotion	195	2
Respiratory System ..	1,903	493
Skin	989	6
Nose	11	6
Injuries, General, Local ..	701	14
Parasites	630	54
Poisons	17	—
	8,641	1,067

The preceding table represents the diseases and the number of cases treated at the following hospitals:—

Georgetown, beds 700; Berbice, beds 150; Suddie, beds 80; Bartica, beds 35; and Morawhanna including Arakaka Ward and Dispensary, beds 32. Total number of beds in the five hospitals, 997.

NOTES ON DISEASES.

The following diseases were not met with: Appendicitis, blackwater fever, cancrum oris, cholera, choleraic diarrhœa, dengue, enteric fever, measles, mumps, plague, pyæmia, rheumatic fever, rheumatoid arthritis, scurvy, and yellow fever.

I. *Beri-beri.*—One case only recorded.

II. *Circulatory System.*—Chief diseases, cases and deaths were as follows: Aneurysm, cases 12, deaths 3; endocarditis, cases 6, deaths 6; valvular heart disease, cases 106, deaths 26.

III. *Digestive System.*—Diarrhœa, cases 541, deaths 102. Hepatic ailments: hepatitis, cases 14, deaths 0; hepatic abscess, cases 11, deaths 6; hepatic congestion, cases 12, deaths 0; hepatic cirrhosis, cases 166, deaths 40; sarcoma of liver 1. Jaundice (cause not stated), cases 31, with 3 deaths.

Hernia appears a common ailment, 79 cases of hernia were treated, 7 being strangulated, of which 2 died.

Hæmorrhoids are fairly common, 44 cases in all were treated. Fistula in ano, 12 cases.

IV. *Generative System.*—Amongst the female ailments are included abortion 50; births 324; pregnancy 113; parturition 388; premature births 31. [It would be well were this group of cases included under a separate heading.]

V. *Lymphatic System.*—Elephantiasis cases 13; 12 being of the scrotum.

VI. *Urinary System.*—Two cases of renal calculi are recorded; no vesical calculi mentioned.

VII. *Nervous System.*—[The detailed account of the nervous diseases seems to have been omitted.]

Amongst the causes of insanity enumerated by the Medical Superintendent of the Public Lunatic Asylum at Berbice are: Malaria and its effects—20 out of a total of 183 being assigned to this cause. This would appear a new suggestion.

VIII. *Organs of Locomotion.*—One case only of ainhum is mentioned.

IX. *Respiratory System.*—Phthisis constituted 576 of the cases included under this heading, with 233 deaths; pneumonia cases 369, deaths 203; pleurisy cases 29, deaths 4; bronchitis and asthma cases 876, deaths 28.

X. *Cutaneous System.*—There occurred: chigoes, 18 cases; scabies, 97 cases.

XI. *Parasites:*—

	Cases.	Deaths.
Ankylostomiasis	428 ..	48
Ascaris lumbricoides ..	8 ..	—
Filariasis and Chyluria (1) ..	179 ..	5
Myasis	8 ..	1
Ringworm	7 ..	—
Tænia solium	— ..	—

XII. *Poisons.*—Cassava cases, 2; gange, 2; kerosine oil, 1; mercury, 2; opium, 3; snake, 7; no deaths.

OPERATIONS.

The major operations consisted of amputations of: breast, 4 cases; shoulder, 1 case; arm, 4 cases; thigh, 5; leg below knee, 17; ankle-joint, 3; partial of foot, 2. Three of the cases of amputations of the arm died, and one of the leg; the others recovered.

Twelve cases of elephantiasis scroti were operated upon, followed by 2 deaths.

LEPER ASYLUM.

Remaining, April 1st, 1903	434
Admitted lepers, 1903-1904	82
Readmitted	23
	539

Of this number 75 died, and 50 others left the asylum for various reasons.

ANNUAL REPORT OF THE GOVERNMENT VETERINARY SURGEON, MR. JOHN RALEIGH, FOR THE YEAR 1903-1904.

During the year 1903-04 epidemics of contagious and infectious diseases were not so frequent as in the year 1902-03.

Glanders.

In British Guiana cases of glanders are becoming fewer. During the year 1892 there were 3,001 cases of glanders in England. This, I believe, was due to an epidemic of influenza which prevailed. When we remember how the acute febrile disease has the effect of developing latent glanders, and thus converting non-infective into actively infective animals, there seems reason to connect the prevalence of influenza with the rise in the number of horses attacked in 1892.

Prevalence.—During the hot months of the year glanders is most prevalent, but of course in tropical countries this is not so noticeable. The explanation I offer of this fluctuation is that the hot months are more exhaustive, and that fatigue causes premature development of the disease, which might otherwise have continued latent in its pulmonary form. I assume that all visible cases of glanders have previously suffered from nodules in the lungs for at least two or three, and possibly for twelve months.

Methods of Spread.—Glanders is spread from horses suffering from a discharge, by means of pails, mangers, nose-bags, water-troughs, &c., or any other intermediate bearer of the active virus.

It is a disputed theory as to whether the disease can be spread by germs floating in the air, but when we consider that dried pus-cells float in the air there is ground to believe that the contagion can be carried in this way from one animal to another. Yet, on the other hand, we must not lose sight of the fact that grooms spend ten and twelve hours a day in infected stables without becoming inoculated.

The horse, showing no signs of disease, that works and eats month after month, whilst horses alongside are infected and destroyed by contagion from it, is an ancient, crusted legend. It dates back from the days when glanders without a nasal ulcer was not acknowledged, and when an enlarged gland, a chronic cough, or an intermittent nasal discharge, were not considered symptoms of glanders. It has fallen to my lot to investigate numerous outbreaks of glanders, and rarely have I not been able to find three or four horses showing clinical symptoms which had been overlooked by the owners and attendants. I venture to assert that the horse showing no signs of glanders is a non-

infective animal, even though his lungs be studded with nodules. Such a horse, though non-infective, is dangerous, because he may develop clinical symptoms very suddenly, and among them may be one accompanied by an escape of active bacilli.

Cause.—Glanders arises only by the introduction into the system of the *Bacillus mallei*, which is found in the discharges from the nostrils, farcy buds, infected glands, and nodules of the lungs.

The bacillus is destroyed when exposed to direct sunlight. It may remain active in clean water for many days. It is destroyed by thorough desiccation, and probably lives nowhere out of the animal body or a bacteriological laboratory for more than three months. It is easily destroyed by the more active disinfectants.

Diagnosis.—Some time ago the diagnosis of some cases of glanders was very difficult, but since the introduction of mallein we need have no difficulty, as an injection will, in 98 per cent. of cases, determine the nature of the disease in twenty-four hours.

Every nasal discharge should be treated with caution until its nature is evident. A unilateral discharge, or a discharge that continues without odour, especially when the appetite remains good, should be considered suspicious. Other aids to diagnosis are: the microscope, cultures on selected media, inoculation of small animals, and Willal's agglutinating test. Some of these are only of value in the hands of an expert bacteriologist. Others require days for their development. Mallein is more trustworthy, more simple, and much quicker. Every *post mortem* that I have performed after the reaction of mallein has revealed typical glanders. Several discussions have taken place lately as to the efficacy of this diagnostic agent, but nothing has been adduced to disprove its value.

Anthrax.

There has only been one sporadic case of anthrax throughout the whole year. This is striking testimony for the inoculation theory. Inoculation against anthrax has reduced the mortality in France from 20 per cent. to ½ per cent.

Cerebro-spinal Meningitis.

In 1903 there was the sporadic form of cerebro-spinal meningitis among the mules at Pln. Hampton Court.

Diseases amongst Fowls.

During the year several epidemics broke out among owls.

Notes and News.

Vaccination in Turkey.—Throughout the Ottoman Government vaccination and revaccination, on the plan followed in Germany, is compulsory. This law came into force on April 18th, 1904.

Medical Holiday Courses in Berlin.—Particulars regarding the next course of lectures, which commence on March 1st, 1905, and lasts four weeks, may be obtained by applying to Herr Melzer, 10 and 11, Zugetstrausse, Berlin.

New Method of Water Purification.—Dr. G. T. Moore, Director of the United States Government Laboratory of Plant Physiology, announces that the addition of 1 part of sulphate of copper to 100,000 parts of water in a reservoir kills all bacteria in the water, and that the water may be safely used for drinking purposes, as all traces of the copper disappear in the process.

Major Ronald Ross.—Trinity College, Dublin, on December 20th, conferred the degree of Doctor in Science on Major Ronald Ross, C.B., F.R.S.

Lintine.—The highly absorbent substance known as lintine may be obtained from John Timson and Co., Limited, 104, Golden Lane, London, E.C. It consists of absorbent cotton fibres made into thin sheets suitable for dressings, bandages, tampons, pads, cushions, or obstetric napkins, of any desired shape or size.

The troops returning from Tibet brought with them two living specimens of the kyang, or wild ass of Central Asia.

Medical Inspection of Ships' Passengers.—The Government of Bombay have had under consideration the question of the abolition of the medical inspection of all persons on outgoing ships not coming within the provisions of the Venice Sanitary Convention, and have published the following resolution: "After carefully considering the question, the Governor in Council has come to the conclusion that inspection should be maintained for the present."

The cultivation of rubber is being seriously taken up in Ceylon. In October about 60,000 of the Para and Castillon varieties of rubber-trees were planted in the island.

Fight with Malaria.—Some interesting figures have recently come into our possession in this connection, says the *Sind Gazette*. The medical officer of a native regiment was determined, if possible, to reduce the very large number of cases of fever among the men under his care, and in July last began by applying kerosine oil to all the water where mosquitoes were likely to breed in the regimental lines, hospital, officers' quarters and mess, and a printed notice was also issued to the residents of all houses in the lines asking them to help by preventing the accumulation of stagnant water, &c. At the same time quinine was given daily for ten consecutive days to all the native children in the lines of the regiment, and after the first ten days quinine was given them on two consecutive days of every week. These combined measures appear to have had valuable results, for whereas from August 1st to November 22nd, 1903, the number of men who reported sick with fever was 1,002, between the same dates in the current year the number was only 35. As regards the children, out of 86 examined in July last, 11 were found with enlarged spleens. In October, out of 61 children only 2 had enlarged spleens. The children, also, were looking more generally healthy than on the first examination.

The rainfall in Western India was deficient in September and October, and some local distress is contemplated.

It has been decided to establish an Agricultural Board in India.

Plague and the Towers of Silence.—The attempt to attach importance to the Parsee custom of allowing the vultures in Bombay to devour the dead with the spread of plague does not find many supporters. Bombay is by some regarded as the focus from which India is being still infected by plague, but to charge the vulture of the Towers of Silence on the Malabar Hill in Bombay with the prevalence of the disease all over India is, on the face of it, an extravagant idea.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Plague.

Prevalence of the Disease.

India.—During the weeks ending November 19th and 26th and December 3rd, the deaths from plague in India numbered 14,115, 14,528 and 17,728, respectively.

South Africa: Port Elizabeth.—During the weeks ending November 26th and December 3rd, fresh cases 0 and 0; deaths 1 and 0; under treatment 4.

Mauritius.—During the weeks ending November 15th and 22nd, fresh cases 11 and 14; deaths 9 and 6.

Hong Kong.—During the weeks ending November 26th and December 3rd, 10th and 17th, fresh cases 0, 0, 3 and 2; deaths 0, 0, 3 and 2.

Suez.—On December 27th, 1 case of plague.

Russia.—In two Stanitzas of the Ural territory, between November 24th and December 26th, 190 persons died of plague (?) (or a disease similar to bubonic plague).

Siberia. — Between October 18th and December 14th, 247 cases of plague have occurred in fur factories in the Vigatka and Slohodskai districts.

Brazil.—During the week ending November 9th 9 deaths occurred from plague. From January 1st to November 9th, 1904, plague has caused 193 deaths in Rio.

Tuberculosis in Brazil.

The annual mortality from phthisis and other tuberculous diseases in the city of Rio de Janeiro amounted, two years ago, to 60 per 1,000 of the population. Recently stringent rules have been drawn up and adopted by the Government for the suppression of, and protection of the community from, tuberculosis. Notification of all infectious diseases, including tuberculosis, is imperative, and it is the duty of any one and every one to report a case of tuberculosis, not only in their own families, but amongst their neighbours.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the Journal of Tropical Medicine *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

Beri-beri.

Beri-beri in Manila.—The Filipinos and Chinese suffer severely from beri-beri in the Philippines. Americans are seldom attacked. The authorities are inclined to ascribe the disease to a meagre diet; rice and fish seems to be the diet most provocative of beri-beri.

Leprosy.

Röntgen Rays in Leprosy.—Experiments have been conducted in Manila to test the curative power of X-rays in cases of leprosy. The improvement in some instances has been encouraging. The hypertrophied ear of a leper was exposed to the rays at a distance of twelve inches from the ear for ten minutes daily. After a few weeks' treatment a marked diminution in size resulted, and several leprous nodules around the ear disappeared. In other experiments the lepers were made to revolve slowly in front of the rays. Noticeable improvement in leprous nodules is reported to have occurred.—*Medical Record*, December 3rd, 1904.

Plague.

Plague in Manila.—The last case of plague was reported in Manila on September 8th, 1904.

"The Sei-I-Kwai Medical Journal," Tokio, October 31, 1904.

(1) Statistics of the Japanese Naval Officers and Men Killed and Wounded in the Present War.

(2) On an Endemic Disease in Namanashi Prefecture. By F. Katsurada, M.D.

(1) Total killed and wounded officers and men in the Japanese Naval Service since the commencement of fighting, on February 9th, 1904, to October 9th, 1904, amounted to 2,321. Of this total, 1,022 are known to have been killed, or died of their wounds.

Ten naval surgeons were killed in action or drowned at sea. Six medical officers were wounded, and six were attacked by infectious diseases, but all recovered. In addition, nine medical attendants (*sic*) were killed or drowned, four were wounded, and thirteen were attacked by typhoid or typhoid fever.

(2) Katsurada publishes a paper on a disease caused by, or associated with, a special parasite previously unknown in Japan. An endemic disease with peculiar symptoms, accompanied by enlargement of the liver and spleen, has been known for many years, but it is only lately any light has been thrown on the subject. In 1888 Majima found the eggs of a special parasite in a case of cirrhosis of the liver. In 1900 Mikami published a clinical account of the signs and symptoms of the disease. In 1893 Shimohira and Murakami recognised the eggs in the liver. In 1898 Kanamori published an account of the eggs of a parasite in tumours he found in the rectum and liver, and, prior to Kanamori's announcement, Yamagiwa found, accidentally, at a *post mortem*, the eggs of a parasite in the

liver, which he termed *Distomum pulmonalis*. Subsequently Nüzuma met with the same eggs in the liver tissue of three dead bodies, and Kurimoto found the eggs in the fæces.

Geographical Distribution.—The disease has, so far, been met with chiefly in the villages situated in the basins of the Fuefuki and Kamanartie rivers. At Fugimimurie, during the five years 1899-1903, out of 201 deaths, there were 23 deaths assigned to this endemic disease.

Symptoms—Mikami describes the general symptoms of the disease as follows: The onset of the disease is gradual and indefinite. The appetite may remain good, but dyspepsia prevails. The abdomen is distended at the upper part, where an enlarged liver and spleen can be felt. The stools are soft.

In course of time anæmia supervenes, the skin becomes of a dirty grey colour, œdema appears in lower extremities, and ascites is common. Diarrhoea, with some blood in stools, and epistaxis are usually noted, but jaundice is rare. The temperature is, generally, below the normal, but occasionally a febrile state occurs.

Towards the end of the disease the liver atrophies and the patient may die of weakness or severe hæmatemesis. The duration of the disease is from two to thirty years. When children are attacked their growth becomes stunted. Further observations on this disease are promised at an early date.

Trypanosoma in the Small White Owl.

In a preliminary note published in *Archiv für Schiffs-und Tropen-Hygiene*, vol. vi., 1902, Dr. Hans Ziemann states that he has again found in a small white owl the same trypanosoma-like formations which he discovered previously in *Athena noctua* (refer to H. Ziemann's book, "*Ueber Malaria*," G. Fischer, Jena, 1898). Schaudinn, in his interesting report recently published in the JOURNAL OF TROPICAL MEDICINE, confirmed the trypanosomal nature of these forms. As was the case in *Athena noctua*, so in the small white owl, Ziemann was able to distinguish male and female trypanosoma, but even the most careful examination failed to discover any further development. In addition, however, to these trypanosoma, numerous halteridium in all stages of development were present. They corresponded with the ordinary halteridium in regard to the formation of gametes and the process of copulation, but differed from them inasmuch as that, in addition to the chromatin stained by Romanowsky's method, a distinctly circumscribed, round, darkly-stained granule was distinctly visible, even in the youngest stages. This dark characteristic granule could also be differentiated from the pigment and chromatin in the later stages of development. In living preparations it took the form of a distinct light-refracting round spot. All attempts to transfer these parasites to other birds failed. Proteosoma were very scarce in Cameroon. Ziemann found that even with the ordinary halteridium he could only confirm infection in 30 per cent. of the birds examined. He found, however, in studying snakes, that quite half of those he examined were infected with Drepanidæ.

Yellow Fever.

ABSTRACT FROM THE PRELIMINARY YELLOW FEVER EXPEDITION OF THE HAMBURG TROPICAL SCHOOL UNDERTAKEN BY DRS. OTTO AND NEUMANN.

(Translated by the Liverpool School of Tropical Medicine, by the kind permission of Dr. Nocht, Director of the Hamburg School of Tropical Medicine. Published by permission of the Liverpool School of Tropical Medicine.)

THE ANTI-MOSQUITO MEASURES IN RIO.

The extermination of the gnat in rooms is only possible through gases which have the power of penetrating everywhere. Houses are disinfected in the following manner: The Central (State) Office for the Prevention of Yellow Fever has to be informed at once of any new case breaking out, when a doctor, appointed by the Government, goes without delay to the infected house, accompanied by a number of men, trained for the purpose of disinfecting houses. The patient is taken to the hospital, unless he absolutely refuses to go there, but he is always taken if the house is in such a state to make it imperative. If he remains in the house a contrivance of nets is placed around him, and his room, which has been made air-tight, is fumigated with pyrethrum (insect powder). The patient remains in the room during the process of fumigating. The fumes stupefy the gnats, and in their agony they seek to reach the light of the window, and fall down at last on white sheets put down for the purpose. They are then gathered and immediately burned. At the same time all rooms in the house, and later on, the other houses of the neighbourhood within a radius of ten to twenty miles, are fumigated with sulphur. Every time subjects for testing are brought by the men, *i.e.*, gnats in small gauze boxes, which are put up near the ceiling; the death of these proves that the method has been effective. After airing the house thoroughly and clearing it from gnats, one of the rooms is provided with wire gauze windows and doors, and the patient placed in it for the whole time of his illness. For better security the room previously occupied by him is again fumigated. The matter is far simpler, of course, if the patient can be sent to the hospital. The whole house and the adjoining parts are then singly fumigated with sulphurous acid. We attended such disinfections several times. The work was highly interesting, especially as not only those yellow fever houses in Becco da Maëda, but also a small brewery close by had to be cleared of gnats.

Here we witnessed some splendid work which was quickly and most carefully carried out by the well-trained men. How tremendous the task was can be gathered from the fact that over 1,000 square metres of paper were used in making the large open halls and rooms air-tight. The storerooms for the bottled beer were swarming with Stegomyia gnats, which found nourishment from the moisture of the corks. When the process of fumigating was finished the floor was covered with dead gnats.

MOSQUITO BRIGADES.

In the same thorough manner, and with the same success which accompanies the clearing of infected houses, the extermination of the insects is executed in the whole town. This gigantic undertaking keeps a small army of 2,000 men employed, whose task it is

chiefly to hunt up breeding places, such as stagnant water in gutters, waste pipes, barrels, ditches, empty food tins, &c., and to destroy the larvæ.

This is done, for instance, by sweeping out gutters. Over large surfaces of water petroleum is poured; empty tins and other receptacles are collected. A bye-law decrees that a certain kind of fish (*barrigudo*), known for its greed, has to be kept in all parks and garden waters, &c. These fish are in the habit of destroying everything they cannot eat. The walls of such artificial ponds or lakes must be perpendicular, to allow the fish to get everywhere easily at the larvæ of the gnats. The drains for rain-water, &c., which form a vast network of pipes close under the surface of the streets, harbour a large number of gnats. To exterminate them it has been divided into ten districts, which are separated by firmly closing locks. The openings from above, as a rule covered with iron grids, are provided with gnat-proof wire netting fastened from underneath, sulphuric acid is in different places introduced through the manholes by means of a Clayton apparatus, and the poisonous gas allowed to stream even into the smallest branches of the drainage system. After a very short time swarms of gnats are seen under the wire gauze to which they go to find an outlet, and, of course, die. This process is repeated at certain intervals in each part of the town, several times during the year. At the same time it serves a second important purpose, *i.e.*, that of killing the numberless rats.

In this case we also find that subjects are tested to prove the efficaciousness of the method, and there is, further, the chemical analysis of the gas. This manner of exterminating rats at Rio is made possible because the street drainage is there placed above the sewer. Whether it would be practical to exterminate in the same way the rats of our city remains to be proved.

Methods to Stamp out Yellow Fever.

In order to stamp out yellow fever entirely, it is an absolute necessity to bring every case under the notice of the authorities, so that the requisite measures may at once be taken. These consist of isolating the patient under the net (to prevent any gnats from infecting themselves), and, on the other hand, in exterminating the already infected gnats. In spite of the law as to reporting every case it may, for various reasons, happen that the Central Office is not informed. To prevent such occurrences, several plans have been adopted; enquiries are, for instance, made on the slightest suspicion, and doctors' prescriptions are examined at the dispensaries in order to find out through them if there are any new cases about, the remedies used for yellow fever patients being all very similar. It facilitates matters considerably that every prescription has to bear the patient's exact address (name of street and number of house).

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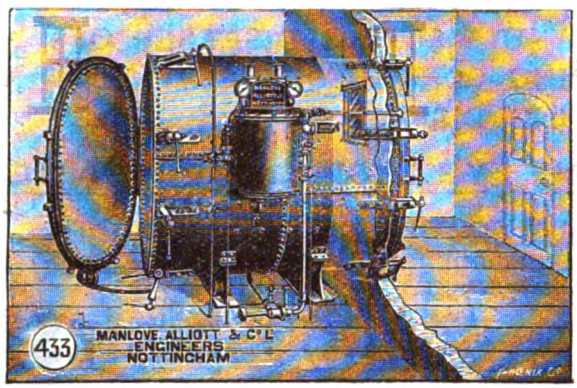
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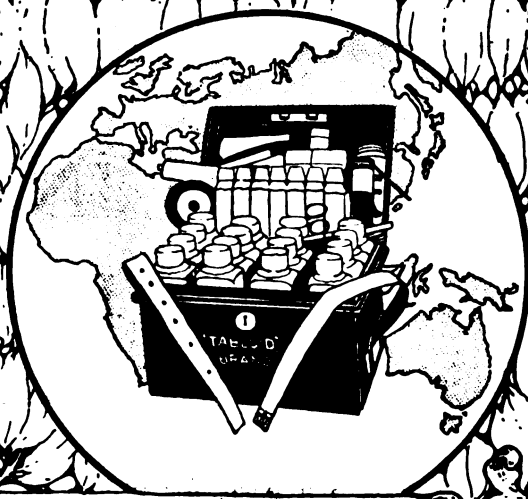
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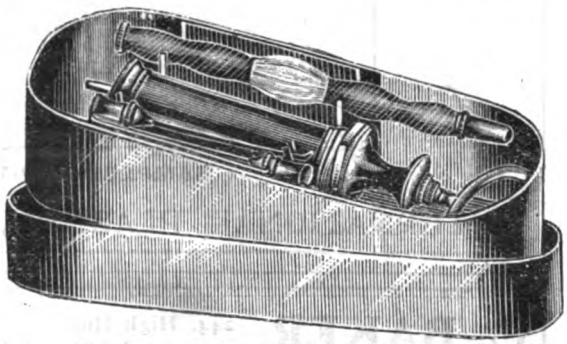
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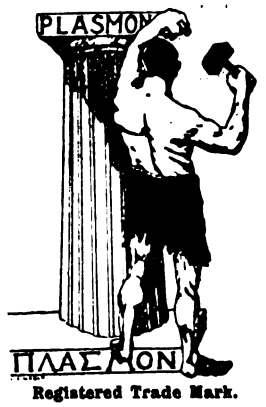
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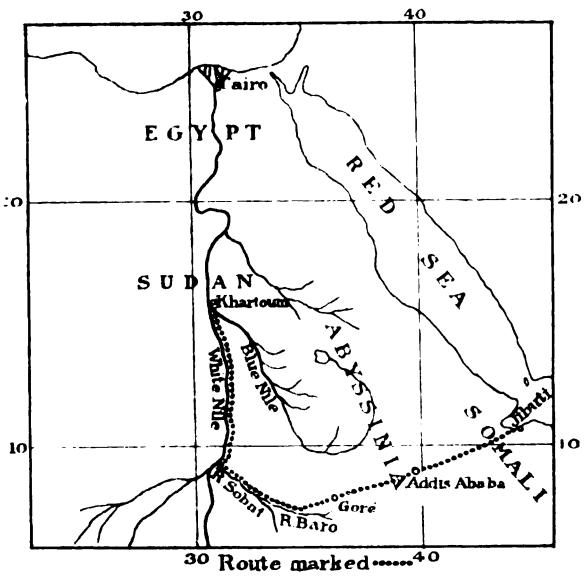


Fig. 1.

It was during the month of March that the ascent from the low country of the Baro and Sobat valleys to the high Abyssinian table-land was made, and notes on some of the cases met with at this period may be of interest.

I.—Cases of Thyroid Growth.

(1) Cases of goitre were met with throughout our route across Abyssinia, but were much more common in the western than in the eastern part. The cases were usually of a parenchymatous type (figs. 5 and 6) but adenomatous and other forms were met with, and Graves's disease (see below) seemed far from rare. All the cases of goitre that I saw were in the plateau itself, and I saw none in the low country forming the valley of the Sobat and Baro Rivers, which are inhabited by Negro tribes of quite different race to the Gallas and Abyssinians of the high country.

The highlands of Abyssinia are of a very mountainous and uneven character, and are well wooded. They lie, in great part, 4,000 feet and more above sea-level. "It has been asserted," says Mr. Berry,[1] "that goitre is not so prevalent on the most exposed parts of mountains, but occurs rather upon the slopes of mountains," but the inhabitants of these regions, among whom goitre is certainly common, exhibit a remarkable predilection for hill-tops as the sites of their villages and towns. The geological conformation of the southern part of Abyssinia is very complicated and little known. It is mostly volcanic in origin, and consists largely of a red, crumbly, tufaceous rock, with frequent outcrops of crystalline limestone.

The case from which figs. 5 and 6 were taken was of some interest. The man was aged 27, well nourished and developed, and lived at Goré. The tumour, which was of five years' growth, and of enormous size, was of a parenchymatous type, all portions of the gland being enlarged and the lobes showing particularly well and symmetrically (see fig. 5). The size and weight of the tumour give the back the curious arched form which has been figured by Mr. Berry in cases of large goitrous growths,[2] though he gives no goitres of this type of the size and symmetry of the one in question. The large parenchymatous thyroid growths met with in Europe are almost always markedly asymmetrical,[3] and I do not know of records of goitrous symmetrical growths of this size, for both the plates and descriptions of the monstrous "thyrophraxies" of Alibert[4] leave one in doubt as to their goitrous nature. The growth exhibited a trilobed form, and enlarged vessels could be seen and felt coursing over the surface of the gland. The patient had a greatly enlarged heart, and marked tachycardia, which became worse on movement that was at all protracted or violent. There was little dyspnœa in spite of the great size of the growth, so long as the patient remained still, and this was perhaps on account of the dependent position that the gland had assumed, so that it pulled upon, rather than pressed on or clasped the trachea. Slightly prolonged efforts, however, or movements in any degree violent, brought on attacks of dyspnœa which were, presumably, largely of cardiac origin. There was no exophthalmos or tremor. A diastolic murmur was present, loudest at the aortic cartilage and traceable down the left side of the sternum, but the pulse was not markedly collapsing. The patient complained greatly of the sensation of throbbing in his neck and head, and of faintness and inability for work. His family were healthy.

(2) Fig. 4 illustrates the incidence of a number of cases of Graves's disease in a family. Two brothers, aged 10 and 13, and a sister aged 12, as well as their mother, four members of the same family, were all affected with more or less typical exophthalmic goitre. I was not able to see the mother—she was said to have a swelling in the neck and prominent eyes—but of the three children I give a photograph. In each

[1] James Berry, "Diseases of the Thyroid Gland," London, 1901.

[2] *Loc. cit.*, fig. 36, p. 79.

[3] Berry, *loc. cit.*, figs. 34, 39 and 46.

[4] J. L. Alibert, "Nosologie naturelle," Paris, 1817, pp. 466-470, and plates C and D.

case the goitre was small. Tachycardia was present in all three, but only the girl and the elder boy had any exophthalmos, and in neither case was the symptom very well marked. Stellwag's sign was present in these two, but von Gräfe's was absent. Fine tremors were present in all three, and they were very nervous, excitable children. In all there was slight cardiac hypertrophy.

Graves's disease not infrequently shows itself in several members of the same family, and has been observed in three successive generations. A remarkable case is on record in which an hysterical woman had ten children, of whom eight suffered with exophthalmic goitre, and one of the latter had three children thus affected.[1]

In children, however, the disease is a rare one. Thus, among 96 admissions for the disease at St. Bartholomew's Hospital, between 1884 and 1898, there were none under 15, and the decade of greatest incidence was between 20 and 30[2]. Drs. Ord and Mackenzie state[3] that among 495 cases only 15 were under 10; while Dreschfeld,[4] writing in 1898, could only find records of 24 cases of the kind, though there are now doubtless far more. As regards the influence of *locality* in the etiology of Graves's disease, it is said to be met with more frequently in districts where goitre of ordinary type prevails than in other parts.[5] In South-western Abyssinia, between the edge of the plateau and the capital, Addis Ababa, I came across two other cases of Graves's disease, both in adult women, making the total of six in all, counting the four in one family. There can be no doubt of the frequency of occurrence of ordinary goitres in this region, but my cases were far too few, and taken, as a result of the exigencies of travel, in much too arbitrary and random a fashion for any statistical argument to be drawn from them. I know of no statistics of the relative frequency of occurrence of Graves's disease among coloured races as compared with whites except the statement of Professor Eshner, of Philadelphia,[6] drawn from records of 227 cases, that it is uncommon among people of colour. All my own cases were in Gallas and Abyssinians, and none were in Negroes. It has been said[7] that tremors are not present in very youthful cases, but they were present in all three of mine, and they were present, though they are now only very faint, in a case which has been attending St. Mary's Hospital for the last eighteen months, under Dr. Sidney Phillips, which by his kindness I have been allowed to see and quote. In this case, a child aged 9, the symptoms, *i.e.*, goitre and tremor, developed first about two years ago. There is no exophthalmos, and tachycardia is not now so marked as it was formerly. The growth pulsates and becomes much smaller when the patient lies down. There are no other cases in the family.

II.—Cases of Varicose Groin Glands and Elephantiasis.

(1) Figs. 2 and 3, Fayesa, a Galla, about 40 years of age (men of this race rarely know their exact age), presented himself to me in camp for treatment, at Bourre, a town on the western edge of the Abyssinian plateau.

He had an enormous swelling springing from the groin on the right side. The swelling was slightly movable on its base or pedicle. It was painless, and he suffered only from the inconvenience that its great weight caused him. The mass was hard, with about the consistence of gristle. The skin over the mass was slightly thickened, but not truly œdematous, as may be gathered from the presence of grooves and creases shown in the figures, and was to a limited extent movable over the subjacent tissues. There was no mark of ulceration present or past about the mass. Common sensation was present on the skin covering the mass, but was diminished in acuity. There were no veins or large vessels prominent upon it.

The right femur was bowed outwards by the mass. The man walked with a slow, awkward, waddling gait. The right leg was perhaps very slightly œdematous, but there was no obvious pitting on pressure. No varicose veins were present. As may be seen by an inspection of fig. 2, the groin glands of the left side were also considerably enlarged, the enlargement involving both the inguinal and femoral set. The scrotum and penis were perfectly normal and were not involved in any way. There was no perceptible enlargement of lymphatic glands elsewhere.

The history, which was obtained with difficulty, owing to the patient speaking a dialect not properly understood by any member of our caravan, was that he had first noticed the growth about twenty years ago, and that it had been growing steadily and uniformly since then until it had attained its present size.

The patient's son, a lad aged 10, had also enlargements in both groins. They were in his case about half the size of the closed fist, and painless. There were no other lymphatic enlargements to be seen in the boy. In him they had been slowly and painlessly enlarging for about two years. The skin in this case was movable over the swelling, but the enlarged glands were attached to the deep underlying structures.

The cases in both father and son were doubtless cases of varicose groin glands, which, in the instance first described, had become enormously developed. It is pretty clear that the growths were due to enlarged lymphatic glands, and were not comparable to the pedunculated elephantoid tumours due to the involvement of limited skin areas, such as have been described as inguinal tumours by Dr. Corney in Fiji and Dr. Daniels in Fiji and Demerara.[8]

[1] Osterreicher's case, quoted by Drs. W. M. Ord and Hector Mackenzie, in Allbutt's "System of Medicine," article "Graves's Disease." Another similar remarkable case has been recorded by Dr. Julius Rosenberg (*New York Medical Record*, 1890, vol. xxxviii., p. 605), in which there were three children of one family affected, both parents and an aunt also being affected, and one of the children developing the disease at eight years of age.

[2] Berry, *loc. cit.*, p. 177.

[3] *Loc. cit.*

[4] *Practitioner*, N. S.

[5] Dr. Savage, quoted by Berry, *loc. cit.*, p. 177, found, however, that "among 1,000 cases of goitre in a goitrous district of the north of England there was not a single case of Graves's disease."

[6] Vide *Medical Press and Circular*, August, 1898, p. 191.

[7] Dreschfeld, *loc. cit.*

[8] Quoted by Sir Patrick Manson, "Tropical Diseases," 1903 Edition, p. 593.

I do not know of a record of a non-malignant lymphatic grandular growth reaching such a size, though the cases of huge lymph-scrotum and elephantoid tumours figured in the text-books of tropical medicine, and by von Hebra[1] and others, greatly resemble the tumour in question, in size, position and appearance, though not in origin.

There was no history obtainable of repeated attacks of lymphangitis such as can often be obtained in cases of elephantiasis.

Cases which can be interpreted as elephantiasis are rather rare in the region where this one occurred. They do occur, however, and I describe shortly such a case below, in which the penis was chiefly involved.

(2) Fig. 7 was a healthy man of middle life, living in the same district as the case last described, in whom the penis, and to some extent also the scrotum, had been swelling for the last four to five years. There was a history of lymphangitis. The case is doubtless one of elephantiasis, affecting chiefly the penis, which has attained a great size. The patient was an Abyssinian (Shoan) by race.

III.—Case of Osteoma (?) Growing from Upper Ribs.

Figs. 8 and 9 illustrate another instance of "virgin pathology," met with in the same part of the country.

Projecting from the thoracic wall, on the left side, was a large tumour, about the size of the patient's head. The tumour was apparently of osteomatous, or chondromatous nature, and had taken some years to reach the size shown in the illustration. It grew, apparently, from the upper ribs, or from one of them, and was not attached to the humerus, the head of which could be felt rotating in the axilla. The skin was not involved, nor was there any ulceration or abscess formation, or other signs of breaking down. The skin was movable over the hard mass, which was painless. Large vessels can be seen in the figures coursing over the surface of the tumour. There was no sign of egg-shell crackling, nor did the tumour pulsate, though the throbbing of the large vessels on the surface could be distinctly felt. No secondary growths were found elsewhere. The nipple was hardly displaced (see fig. 8), the growth being almost entirely external to it.

The patient, a Galla, suffered little inconvenience from the presence of the tumour, except that he was unable to bring his left arm down to the side.

IV.—Leprosy.

Cases of leprosy were met with throughout the route across Abyssinia. Both the anæsthetic and nodular types were met with, and the disease seemed very prevalent, indeed, a large proportion of the patients who presented themselves for treatment were afflicted with this malady. The disease, therefore, in this region, certainly extends south of the ninth parallel (see fig. 1). In the low country of the Sobat and Baro basin I came across no cases of leprosy. This does not prove that there are none there, because the naked tribesmen of that part, Nuers, Anyuak and Yambo, are much less ready to present themselves for treatment than are the relatively civilised Gallas and Abyssinians. I think, however, it must certainly be rare in the low country; rare, that is, as compared with its frequency in Abyssinia proper, because leprosy is not a disease which, if common in a country, can very well escape the notice of the traveller, even if the sufferers do not come to beg for treatment.

It is worth noting that the inhabitants of the Sobat basin (among whom leprosy is rare or absent) live very largely on fish. All their villages are built on the rivers or very near them, and often at night, on the Sobat, the whole river seems ablaze with the torches of the fishing canoes. The fish they eat both fresh and dried. In the Abyssinian highlands, on the other hand, where leprosy is very common, fish forms a very small part, if any, of the native diet; for here there are no large rivers, and the natives have their flocks and herds, and grow large quantities of dhurra and other corn.

V.—Hill Diarrhœa (?)

In ascending from the Upper Baro to the plateau, we rose in two or three days' time from the hot low country where we had spent the previous two and a half months, to an elevation of about 5,000 feet. At this period four of the six whites who then composed the party were affected by a painful and frequent diarrhœa. The stools were copious and frothy, mixed with mucous, sometimes with streaks of blood. The attacks passed off in three or four days' time, and all were over in a week from the outbreak. As our diet had not changed during this period, the attacks must be attributed to climatic influences, or differences in water supply, and I group them together as "Hill Diarrhœa," perhaps comparable to the disease met with under similar circumstances in India. Our Somali and Abyssinian servants did not seem to be affected by the change.

[1] Hans von Hebra, *Wiener Klinick*, vol. xi., 1885, p. 217, *et seq.*, "Elephantiasis Arabum."

TUBERCULOSIS AMONG CIVILISED AFRICANS: SPECIAL PREVALENCE AND FATALITY.

By Major F. Smith, D.S.O.

Royal Army Medical Corps, Sierra Leone.

The Africans referred to in the title of this paper are the soldiers of the West India Regiment. These men, recruited from various islands of the West Indies, are descendants of the liberated people of bygone days. They are treated much the same as white troops with regard to clothing, housing and rations. The stations permanently occupied by the regiment are the West Indies and West Africa, both having warm, sunny climates, and the latter being the place from which, presumably, most of the men's ancestors came. In whatever station the men may be they suffer from tubercle to an abnormal extent as compared with other troops. The following table exemplifies this.

In no part of the Empire do the European soldiers suffer to anything like the same extent as the West Indian.

TABLE I.

Incidence of Tubercular Diseases at Home and Abroad.

(Extracts from *Army Medical Report*, 1898.[1])

Stations	Ratio per 1,000 for 10 years, 1888—1897			
	European Troops		Non-European Troops	
	Invalids	Deaths	Invalids	Deaths
West Indies ..	1·49	0·33	7·36	3·02
West Africa ..	0·00	0·00	3·32	5·24
United Kingdom	1·86	0·79	—	—
Gibraltar ..	1·19	0·47	—	—
Malta	1·32	0·84	—	—
Canada	1·47	0·91	—	—
India	1·22	0·79	—	—

In more recent years the West Indies have been subdivided in respect of medical statistics, and a West India Battalion has been stationed in Bermuda. Figures for separate stations are given below.

TABLE II.

Incidence of Tubercular Disease in certain Foreign Stations.

(Extracts from *Army Medical Report*, 1902.)

Station	Ratio per 1,000				
	European Troops		Non-European Troops		
	Invalids	Deaths	Invalids	Deaths	
Jamaica ..	1·92	0·70	7·85	2·42	10 years (to 1901).
Barbadoes.	1·56	0·78	6·27	3·76	
Bermuda..	0·88	0·73	9·63	5·78	3 years (1899-1901) for non-Europeans, 10 years (to 1901) for Europeans.

In 1898 a portion of the 3rd West India Regiment was stationed at St. Helena. The average strength was 188. There were two deaths from tubercle: number of invalids not recorded.

The later returns for this station are not yet forthcoming. St. Helena is included in the South African command, and the ordinary returns have been suspended with a view to inclusion in the Medical Report of the war.

TABLE III.

Incidence of Tubercular Diseases on Two Classes of Soldiery in Sierra Leone.

Year	West African Regiment			West Indian Regiment		
	Strength	Invalids	Deaths	Strength	Invalids	Deaths
1901 ..	1,082	0	1*	839	5	6
1902 ..	1,012	1	0	761	1	7
1903 ..	1,016	0	0	1,024	1	2†

* A Freetown man with a well-known Creole name.

† Battalion relieved by one from West Indies this year. "Unfits" from incoming battalion would be weeded out in the West Indies before departure.

During recent years there has been in Sierra Leone a regiment (The West African Regiment) recruited entirely from among natives of the Colony or hinterland. The men are all *country-men*, as distinguished from the Sierra-Leonian (or Creole as they prefer to be styled) descendants of released slaves planted in the Colony. We have, therefore, an opportunity of comparing the incidence of tubercle on the two classes of soldiers.

The excessive tubercle rate amongst West Indians in West Africa is no new thing. I have looked up the old manuscript mortality lists for the years before the Army Medical Annual Reports began to be issued, and I find that a large proportion of the deaths in the old days were from tubercle.

CUBIC SPACE ALLOWED.

I make no attempt to account for the predilection of tubercle for the civilised African. In the army the African lives under more favourable conditions, probably, than in civil life. In the matter of air space in barracks the regulation is that, "The cubic and floor space for native troops serving in their own country, *or in a similar climate*, is the same as that approved for British troops serving at home stations. This means in West Africa that the native gets the same amount of space in his home as the English soldier does in England. The allowance seems liberal enough. It has been the custom in Sierra Leone to treat the West Indiaman, in this regard, as if West Africa were his home. The white soldier in Sierra Leone gets an extra allowance of air space, decreasing in adverse proportion to the altitude of the station.

It would seem in accordance with modern ideas that instead of getting less space, the West Indiaman ought to get more than the European. That air allowance is a factor of much importance is doubtful, however.

There are no data by which we can arrive at a knowledge of the mortality rates among the civilised Sierra Leonians as compared with the "bush" men. The number of deaths registered as "tubercle" for the whole population of civilised and uncivilised is relatively less than the West India rates quoted.

Judging by some cases of rapid tuberculosis of organs other than the lung which have come under my notice among a small body of men in the prime of life, I should say that many tubercle cases among Negroes in malarious places are returned under other headings, especially among civilians, who do not always call in a doctor. In two of these cases the condition was diagnosed after death, and in another diagnosis was only made after much examination, consultation, &c., including two exploratory operations.

It would be interesting if those having to do with Negroes in other parts of the Empire than those mentioned above would publish their experiences with regard to the incidence of tubercle among their charges, for the subject may have a distinct bearing on prevention.

The main question is—Does the excessive prevalence of consumption and other tubercular diseases among civilised Negroes arise from unusual susceptibility, or is it a consequence of their mode of life?

AFRICAN SOLDIER AND "BUSH" MAN COMPARED.

The principal points of difference in manner of living between the civilised African soldier and the "bush" man seem to me to be in this connection, in West Africa:—

[1] I select this period because disturbing influences come into the statistical returns from West Africa after 1898.

Civilised.	Uncivilised.
Houses.	
Permanent site; large; durable in material; well ventilated.	Very small, majority have only one room; site less permanent; material requires frequent renewal; badly ventilated.
Fires.	
None in the dwelling rooms, except very occasionally during the "rains."	Fires constantly on the floor of dwelling room to keep the palm-leaf thatch in good order and the people warm; no chimney; rooms full of smoke.
Clothing.	
Woollen and abundant.	Cotton and scanty, or none at all. As a soldier he gets flannel shirts, a cotton suit and a woollen one. Goes bare-legged, and when off duty lives in the way he has been used to.
Susceptibility to Dry Cold.	
Not marked, but has an hereditary fear of cold; has also acquired from the white man a dread of night air and dew.	Extremely susceptible; hates a breeze; loves to squat over a fire, even in this warm climate.
Susceptibility to Cold Water and Wet Clothes.	
Same as Europeans.	Indifferent: as my native "boy" says: "We own clothes can soak pon we tey he dry—he no go do we notting." Bathing at any hour is universal; mothers may be seen sousing themselves and their suckling babes in the brook after sunset, and they use no towel afterwards.
Food.	
Same rations as European soldier.	Feeds himself. Rice, fish, palm-oil, cassava, fruit, and occasionally red meat, the diet, that is, on which he was brought up, but with more meat, owing to his having more money to spend; two meals a day, morning and evening, irregular as to time.
Alcohol.	
Very little compared with the average European.	Still less, but the non-Mahomedan part of them have occasional gin-drinking sprees, when they "jollify," as my servant puts it, and "dance the whole night long." Steady topers are rare.
Association with Europeans.	
The West India soldier lives side by side with Europeans in barracks. Rooms may be occupied by West India men after vacations by Europeans, and *vice versâ*.	The native soldier lives entirely apart, either among his own people or in cantonments of huts built in native fashion. Each man may have a room for himself and his wife.

With regard to the above, it must be stated that half the native soldiers live in the "bush" stations native fashion. A large part of the other half have lived in the cantonments at Wilberforce, Freetown, since the end of 1902. The "bush" troops are relieved every six months. This means that the men spend half the year in the "bush" and the other half in Wilberforce cantonments. Except that fires in the living rooms are discouraged, the men in cantonments live in much the same way as their civilian relations.

A SPORADIC CASE OF EXOPHTHALMIC GOITRE.

By L. E. Ashley Emile, L.R.C.P., L.R.C.S.Edin.

Mopra, Zambesi River, East Africa.

In reviewing the lists of diseases which have from time to time been published in the Journal of Tropical Medicine by various observers in East and Central Africa, no previous mention of exophthalmic goitre as a disease of these parts appears to have been noted, so I may presume that the disease must be very uncommon in these parts of Africa. During my own experience in Zambesia I have met with only a single case, the publication of which, though not a tropical disease, but occurring as it does in this tropical list, is of interest from a geographical point of view:—

Case.—Patient, a Kaffir, of the Coubo tribe, inhabiting the Zambesi district, was brought to the local dispensary by his brother suffering from a painful swelling in the neck and great difficulty in breathing.

History of Attack. — The following history was elicited: Patient, who is a labourer, working in the sugar plantation here, is said to have been in perfectly good health and discharged his duty in the fields in a satisfactory manner on the day previous to the attack; after the day's work he retired to sleep as usual, feeling quite well. During the night he is said to have been awakened by a visit from a hyæna to his hut, which frightened him a great deal. On rising in the early morning he vomited twice and complained of great pain in the neck. His brother, noticing something unusual in his appearance, brought him to the dispensary for treatment. His family history revealed nothing of importance, there being no hereditary tendency; all the other members have been in good health, and patient himself has never had a similar attack.

Present Condition.—Patient is a young man about 25 years of age, of spare build, and lighter in colour than the ordinary native of these parts, anæmic in appearance, and of marked neurotic temperament, displaying fits of restlessness and motion without any reasonable cause, and having a peevish and irritable disposition. The cardinal symptoms of the disease are well marked, viz., tachycardia, exophthalmos, enlargement of the thyroid and tremor.

Circulatory System.—Has tachycardia with increased force of the individual heart beats; cardiac impulse visible in natural position and diffused over a wide area; pulsation of the carotid arteries at the root of neck is also well marked and of a forcible and throbbing character. On auscultation a loud systolic bruit confined to the apex is heard, and another over the base corresponding to the pulmonary area traceable upwards into the neck; superficial and deep cardiac dulness normal. Pulse 96 per minute, of medium volume, low tension, regular in rhythm, and easily compressible. Face has a flushed appearance.

Exophthalmos.—Right eyeball presents a greater prominence than left, giving the patient a terrified and distressed appearance. There is want of uniformity in the movements of the eyeball and upper lid on looking down (v. Gräfe's sign), and the palpebral aperture wider than in health (Stellwag's sign).

Both these signs are better marked in right eye. Pupils and accommodation unaffected. Winking power very much restricted. Vision examined and found normal in both eyes.

Enlargement of Thyroid.—Right lobe enlarged to the size of a chestnut, soft in consistence and painful on pressure, skin freely movable over it. Thyroid tissues dilated and visibly versatile. Thrice elicited on palpation. On auscultation a loud humming murmur heard all over swelling. No enlargement of left lobe apparent.

Tremor is a characteristic symptom in this patient, the movements being fine and quite involuntary, increased on excitement or emotion, imparting to observer an impression of the patient's terror of impending dissolution. Headache severe and persistent, with giddiness and tinnitus producing slight incoordination when standing up from the sitting posture or attempting to walk. Knee-jerk retarded and diminished.

Other Symptoms.—Voice altered in tone, of a higher pitch than usual; breathing hurried and jerky in character. Nothing abnormal detected in the lungs. Has nausea (probably nervous in origin), clean tongue and good appetite. Bowels freely moved, urine normal. Skin moist, perspires a great deal. No pigmentation or any eruption on body.

Treatment.—Absolute rest in bed and light diet. On admission, calomel, grs. vi. at night, and sodii sulphates ʒi. dissolved in half a cup of warm water next morning to relieve vascular congestion. Counter-irritation in the form of Lin. Iodi. locally to gland, followed after a few days by inunction of red iodide of mercury ointment, B. P. Internally, small doses of opium as recommended by Musser.

After Notes.—The day after admission left lobe enlarged to the size of a marble, soft and painful on pressure. Temperature 100° F., pulse 96. Dyspnœa less. During next few days all the symptoms gradually subsided, and after a week's stay in hospital patient felt quite well and was discharged to duty.

Remarks.—There are certain points in the above case which are of interest and need some emphasis. (1) The extreme rarity of exophthalmic goitre in this part of Africa and especially among the native races in general, attributable to the fact that the African has less tendency to nervous diseases, particularly those of the functional type, so prevalent among civilised races. (2) Presence of severe pain in the enlarged gland, which is quite an unusual feature of the disease, and one which I have not met with in any other case. On referring to various text-books on medicine no mention is made of its existence. (3) That profound mental emotion produced by fright (the only attributable cause of the attack in question) is responsible for the disturbance of the vaso-motor system, as evidenced by the clinical symptoms, is in accordance with the consensus of opinion as to the neuropathic nature of the disease. (4) Finally, the rapid and complete recovery in a week.

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"PRE-INVASION" SIGNS AND SYMPTOMS IN DISEASE.

FROM a study of the signs and symptoms of certain diseases recently brought forward by several observers in different parts of the Tropics, it would appear to be necessary to recast our text-book descriptions to some, or even to a marked, extent. In the commoner ailments, such as scarlet fever, typhoid, small-pox, &c., the descriptions of the periods of incubation are passed over in our text-books, with a mere comment; the sum and substance being that indefinite symptoms may prevail during incubation, but they are of such a nature as to occasion no necessity for accurate description. In measles it is allowed that signs and symptoms of a common cold may prevail before the invasion period sets in, but this amount of admission is exceptional in other ailments.

How far this is true there is no means of know-

ing; clinical observation seldom begins until the stage of invasion develops with increase of temperature and it may be of rigors. We have become accustomed to accept this teaching, but we have no guarantee that it is true, and when we gauge these statements in the light of what we have learned lately in the case of plague and beri-beri, we have some reason to doubt the belief. In the case of plague we have dated our descriptions hitherto from the onset of fever with bubo, fever with pneumonia, or fever with evidence of septic-æmic infection. The observations of Dr. J. Bell and Wm. Hunter in Hong Kong have modified this clinical record. They have shown us that, before the so-called initial fever and bubo, there is a period of gastro-intestinal catarrh, attended by a preliminary rise of temperature occurring during what we have hitherto considered to be the symptomless incubation period of plague. They have even stated that the presence of the plague bacillus in the blood which was considered a late development in plague is nothing of the kind; the bacillus has been found by these observers in the blood of persons suffering from symptoms which did not even indicate that plague was threatening. Attention has already been drawn in the Journal to the epidemiological importance of these observations, but the matter goes deeper and opens up a wide sphere for investigation. Are we correct in assuming that in other ailments the symptoms during the incubation period are of secondary clinical significance?

In Beri-beri Dr. Hamilton Wright also draws attention to what we have termed "pre-invasion" symptoms. We are accustomed to regard a slight œdema over the shins, patches of anæsthesia over the front of the leg, the dorsum of the foot, the finger-tips and other parts, accompanied by marked pain when the calves of the legs are pinched, as the initial signs and symptoms of this disease. Dr. Wright, however, looks upon these evidences of Beri-beri as rather late developments, and describes a period of gastro-intestinal catarrh with a preliminary fugitive fever as yet earlier indications of infection. The Duodenitis theory of beri-beri advanced by Dr. Wright would explain the appearance of early alimentary canal infection in Beri-beri, and both clinical and *post-mortem* records point to the justification of the contention.

With these facts before us it behoves us to examine more carefully the symptoms of all our diseases during the incubation period; for by so doing, not only may the spread of infection be possibly curtailed, but means of arresting the disease even in the individual attacked might be undertaken with a greater degree of hope for successful treatment.

That malarial parasites are present in the blood long—it may be years—before feverish symptoms arrest attention is well known, and, could we call so extended a time the incubation period of malaria, we have another and most important addition to the diseases which exhibit definite indications of infection before recognised clinical evidence is forthcoming.

J. C.

THE LONDON SCHOOL OF TROPICAL MEDICINE.

Of the thirty-seven students who attended the above School during the Session October to December, 1904, the following eighteen passed the examination at the end of the course:—

Dr. D. H. Ainslie. With distinction.
Dr. D. Alexander (Colonial Service). With distinction.
Dr. D. A. Ashton (Colonial Service).
Dr. J. C. Carr.
Dr. J. H. Cook. With distinction.
Dr. T. G. D. Cooper (Colonial Service). With distinction.
Dr. R. Dane (Colonial Service).
Miss Kathleen Dawson.
Dr. W. A. Densham.
Dr. G. H. L. Fitzwilliams.
Dr. J. Gillies.
Dr. J. W. Gromitt (Colonial Service).
Dr. W. F. L. A. Holcroft (Colonial Service).
Dr. H. N. H. Joynt (Colonial Service).
Dr. A. C. Lorena (Colonial Service).
Dr. F. L. Norris (Colonial Service).
Dr. P. Phillips (Colonial Service).
Dr C. H. D. Ralph (Colonial Service).

Surgeon-General Alfred H. Keogh, C.B., has been appointed Director-General of the Army Medical Service.

Translation.

THE DEVELOPMENT OF HERPETOMONAS, A FLAGELLATE RELATED TO THE TRYPANOSOMA.

(Preliminary Communication.)

By S. Prowazek (Rovigno).

[Reprinted from *Arbeiten aus den Kaiserlichen Gesundheitsamte*, Part III., Vol. xx.]

(*Translated from the German by P. Falcke.*)

(*Continued from page* 7.)

The investigations made in regard to the stages of fission, and which will be described further on, bear out the correctness of this observation. The flagellate apparatus, which is of extreme importance in judging this form, consists of the following parts: (*a*) Two flagella intimately connected with each other by means of a sort of delicate membrane; they stain red by Giemsa's method, and are usually double the length of the cellular body. (*b*) A diplosoma which can only be observed under a high power and from which the flagella, as it were, sprout. (*c*) Two thicker intermediary pieces or rhizoplasts which, separated from the diplosoma, run towards the blepharoplasts; these are connected with the flagellate nucleus by a narrow thickened zone of protoplasm.

Laterally from the elongated flagellate nucleus, or blepharoplast, there is a button-like formation, from which proceeds a "double" thread, which has a distinctly spiral course and runs along the entire length of the body; a few isolated observations tend to show that the double thread seems to be connected with the ends of the two rhizoplasts. This thread or filament terminates in the posterior end of the body with an indistinct double granule. According to Schaudinn's opinion (compare his work in this Journal) the entire body of the flagellate is traced to a doubly flagellated trypanoplasma, folded together or bent back on its longitudinal axis. The undulating membrane of the trypanosoma, according to this investigator's observations, is traceable from a deviating central spindle; in the form here described the central spindle is inflected and remarkably stretched; it is again found in the double filament just described, the terminal "double granule" of which may be compared to a Flemming's intermediate body. The double thread is spirally twisted because the developing deviating central spindle experiences some resistance at its ends and thus induces a spiral turn such as is the case in the intranuclear central spindle of the nucleolus of the ciliates or the gregarines. Whereas, the central spindle of the trypanosoma is heteropole according to the investigations of Schaudinn, a condition which we shall be in a position to confirm here later on—and therefore as regards its pole functions unequally, it is comprehensible that the "pressure" of the one bifurcation of the bent central spindle predominates over the "pull" which is observable in the other filaments running parallel, so that there is a form-giving principle in the central spindle of this flagellate. The long, slender, stiff form of the flagellate is a product of the powers of the inflected long spiral central "spindle," or of the central filament, and to which with a few phylogenetic alterations the axis filaments and axis rods of the Trichomastiginæ, Trichomonadæ, Chilomonadæ, &c., may be traced back. The last remains of an undulating membrane are also to be found in the herpetomonas in the delicate, occasional membrane which is stretched between the two flagella.

The movement of the creature is very characteristic, and may be compared to a stiff needle, to which is threaded a whip-like swinging double thread.

The too flagella, not rarely, tear off from their blepharoplast, and then swing about independently for about seven minutes with their basal bodies and rhizoplast parts.

The parasites frequently agglomerate in thick rosettes (fig. 3) in the proventicle or posterior part

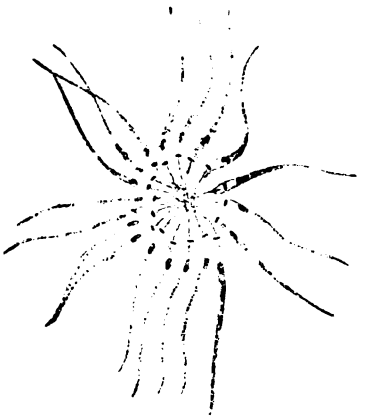


Fig. 3.

of the intestinal tract, when a mucous substance is secreted between the flagella. This kind of agglomeration is fundamentally different from that of the trypansomes of rats, but both methods can be brought to coincide by the consideration that the body axis primarily is bent back on itself, so that the morphological anterior end lies *next* to the posterior end. The agglomeration of the trypanosomes of birds investigated by Schaudinn also coincides remarkably with mine, inasmuch as, in contradistinction to the trypanosomes of rats, they also agglomerate at the flagellated extremity.

Both forms are to be traced back to bipolar trypanoplasma with two flagella, only in the course of phylogenesis sometimes one pole or the other has been suppressed. Herpetomonas is a terminal member of this development, as in it the axis is bent or doubled back so that the two poles lie side by side. The flagellata are rheotropical, and do move much with strong currents. This property is of advantage to them in so far as they are not immediately torn away with the moving masses of contents of the intestine. The property of rheotrophism is possessed likewise by the flagellate-like forms of the hæmatozoa, which must migrate at the spot of puncture of the mosquito into and against the direction of the circulation of the blood of the new host. (Compare Schaudinn's work.) I failed to keep the flagellates alive in Schulze's moist chamber for a longer period than twelve hours, at which term they always perished.

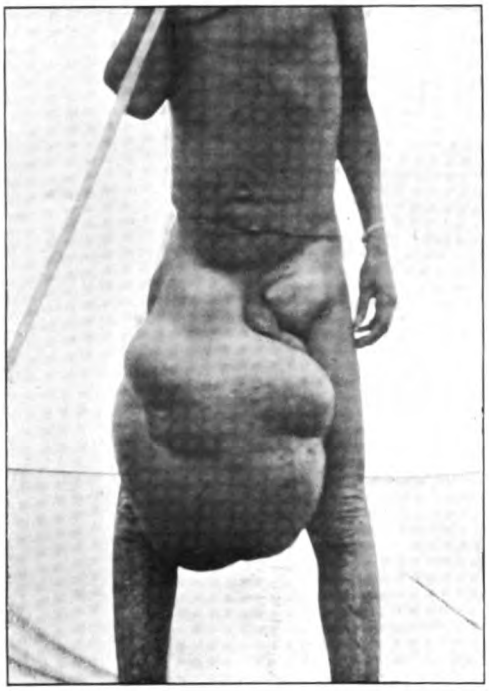


FIG. 2.

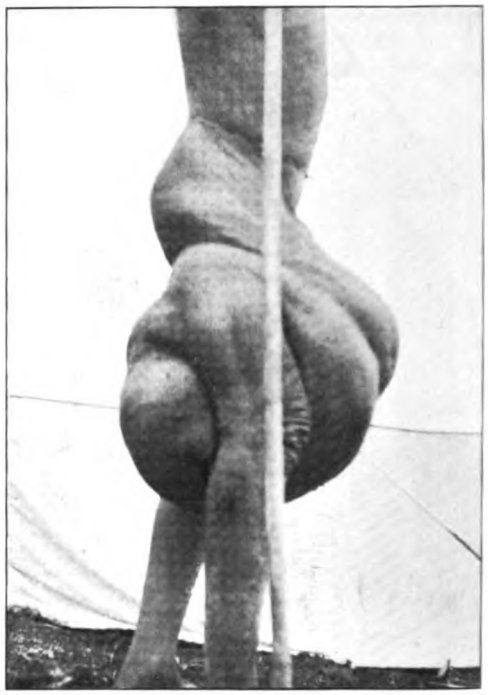


FIG. 3.

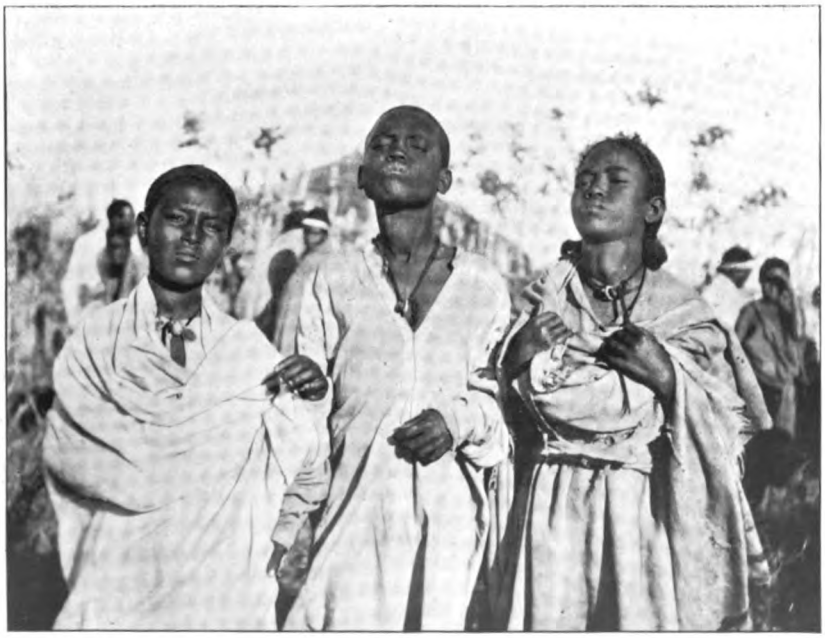


FIG. 4.

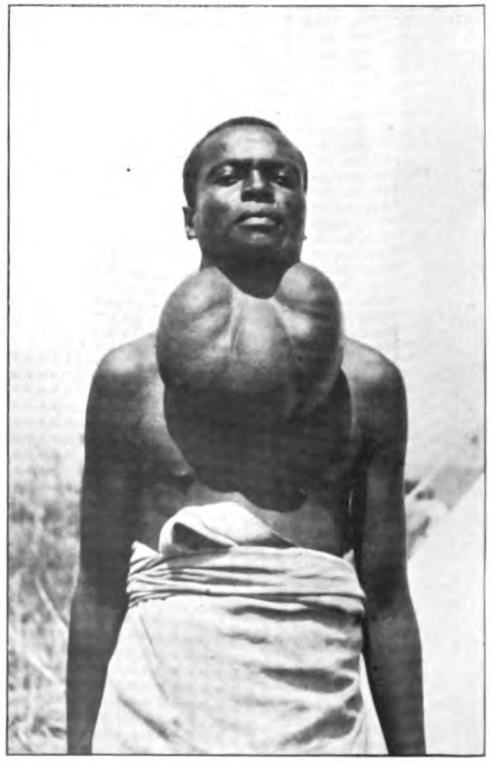


FIG. 5.

TO ILLUSTRATE NOTES ON CASES OF ELEPHANTIASIS AND OF THYROID GROWTH MET WITH IN SOUTH WESTERN ABYSSINIA IN MARCH, 1904.

By CHARLES SINGER, B.A., M.B.OXON., M.R.C.S.ENG.

Bale, Sons & Danielsson

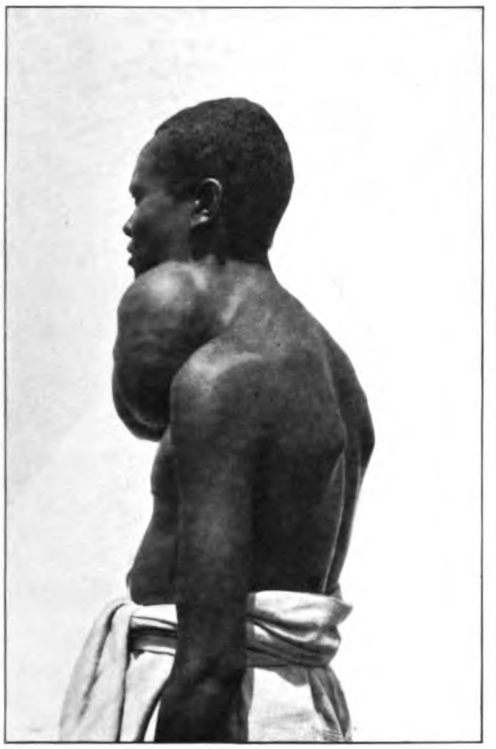


FIG. 6.

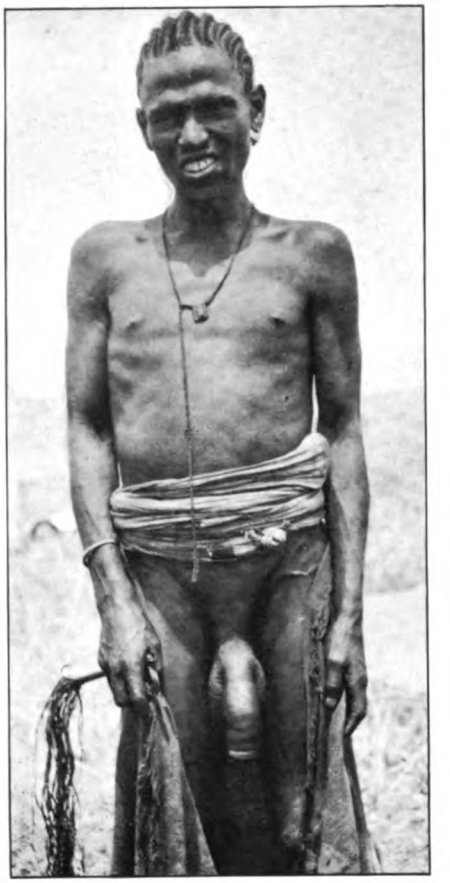


FIG. 7.

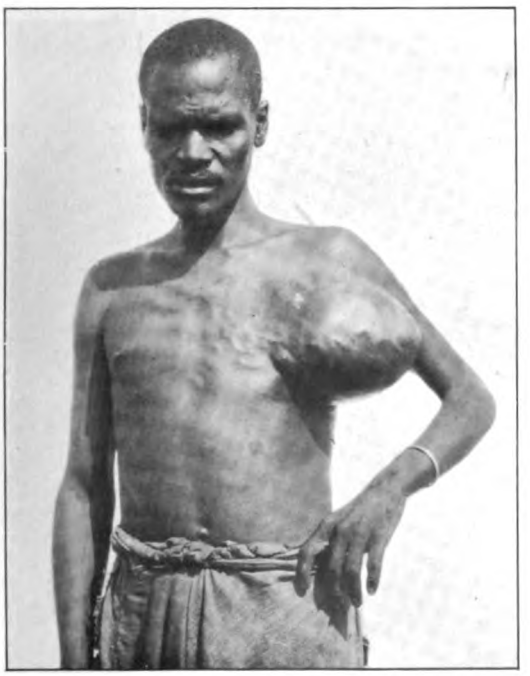


FIG. 8.

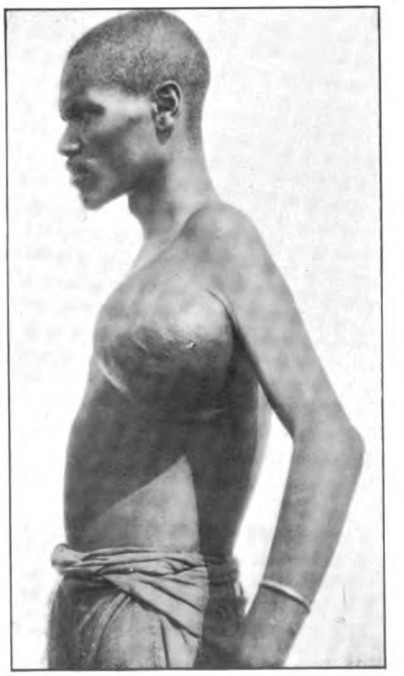


FIG. 9

The *Herpetomonas sarcophagæ*, n. sp., are very similar to the above form, but their form is more compressed, their protoplasm closer, and they possess a larger nucleus, richer in chromatin. The neuclus, in contradistinction to *Herpetomonas muscæ domesticæ*, which has eight chromosomes, appears to have sixteen chromosomes. When agglommerating the flagellates draw out longitudinally, and the cellular body possesses equally a long granular caudal process (fig. 3). Of each 100 flies examined eight on an average were infected.

Division.

Division is longitudinal (fig. 2, *b*). The two nuclei divide independently. The nutritive nucleus divides up according to the method of primitive mitosis, which represents a transition between actual mitosis and actual amitosis, as has already been demonstrated in numerous other protozoa. The chromatin in *H. muscæ domesticæ* collects into eight curved chromosomes, which arrange themselves into a sort of equatorial plate, and are divided from the interior body, which assumes a dumb-bell shape. The blepharoplast divides apparently by means of a tightening—which occasionally is only one-sided, so that a formation clover-leaf-like in shape ensues. In specimens suitably compressed one may, moreover, discern that the interior body becomes tightened dumb-bell-like and divided, and the masses of chromatin are distributed (fig. 2, *c*). Each individual, the result of the division, takes over one of the old flagella and with it a basal granule, which soon divides, and from which a delicate filament, the new flagellum, grows, and from which also, centrally and in the same manner, a new rhizoplast originates (fig. 2, *b*).

In a similar manner in reconstructions the old flagella become absorbed after lively periods of division connected with irregularities, and are immediately replaced by new flagella, which in size are more suitable to the bodies.

Besides these motile forms we find forms without flagella, immovable or with only weak, "worm-like" motion in those flies that have fasted and possess only a feeble or even no funnel-like or chitinous membrane in the mid-gut. The forms completely coincide with those described by Léger[1] as *Herpetomonas jaculum* from *Nepa cinerea*, and which he has termed "formes grégariniennes." He recognised their significance, and on the grounds of this observation he confirmed a certain relationship of the flagellates to gregarine-like sporozoa from the phylogenetic aspect:—

"L'existence de ces formes grégariniennes chez un Flagellé typique constitue un puissant argument en faveur de l'origine flagellée des Sporozoaires que j'ai déjà soutenue et que, d'ailleurs, Bütschli avait pressentie dès 1884."

Schaudinn drew attention to the relation of the Coccidia to the flagellates; Wettstein pointed out the connection of the malaria parasites with the flagellates.

In the forms mentioned the flagellate apparatus is more or less reduced, the flagellum is retracted, and the creatures mostly slightly curved to a sickle form. At this stage also they multiply by longitudinal division, sometimes, however, the portions remaining connected.

Under less favourable conditions of life the blepharoplast is drawn into the depths, and appears to relinquish some of its substance to the protoplasm, become simultaneously closer. The rhizoplast experiences a great shortening, and thus also draws the flagellum with its granule into the interior of the cellular body. Exteriorly a thick gelatinous envelope, which is stainable red after Giemsa, is exuded. It consists of a double row of granules, which later becomes mucous. In this manner permanent cysts are formed (fig. 4).



Fig. 4.

During their formation the cellular body occasionally degenerates, the exterior gelationous envelope then being much lobulated and pitted.

Copulation.

Copulation, which rarely takes place, possesses an original character in these forms, inasmuch as almost similarly constituted forms copulate with each other.

The one individual prepared for copulation is mostly only a little larger, and possesses a greater avidity for the pigments. According to analogy with the other flagellates it may be pronounced to be the female.

Before fertilisation the cells undergo a considerable reduction, in which the following visible parts are implicated: (1) The flagellate apparatus, and probably also the basal bodies; (2) the blepharoplasts; (3) the nutritive nucleus; (4) the central axis filament and its separate diplosoma.

As the two principal constituents of the cell (which here is heteroplastide), namely, the blepharoplast and the nutritive nucleus, are independent of each other, they are likewise subject to a periodically divided reduction, thus all parts subject to reduction are never found to be simultaneously affected, though occasionally the reduction nuclei of the central nucleus are very perishable.

Reduction of the Flagellate Apparatus.

The heteropole axis filament contracts spirally (fig. 5, *a*), thus conveying the blepharoplast attached to it into the depths. The rhizoplast likewise becomes shortened, and later on perishes, so that after the absorption of the flagella the two basal bodies are left lying free in the cellular body (fig. 5, *b*, *c*). The absorption of the filamentous differentiations takes place by means of knotty consolidations being formed along their course, and which swell and finally cause granular disintegration of the filaments. The two basal bodies likewise appear to divide and reduce their bulk; at all events, later on they become smaller, and are perceptible with difficulty. The diplosoma separated from the axis filament divides (fig. 5, *b*) twice into two and then four, still connected by fine threads; two of these granules again subdivide, and finally a heap of six granules are found in the posterior part of the cell (fig. 5, *c*). As, later on, various products of conversion and granular divisions of nuclei appear in the cell, I am no longer able to follow the ultimate fate of these in the masses of granules.

The blepharoplast undergoes two divisionary reductions (fig. 5, *b*, *c*). The first one is distinguished by a heteropole "spindle" (fig. 5, *b*), such as we are already

[1] L. Léger, "Sur la structure et le mode de multiplication des flagelles du genre Herpetomonas Kent, *Compt. rend. d. seances d. l. Academie d. Sciences*," Paris, 7 Avril, 1902.

acquainted with in a large number of protozoa and which, according to Reinke's statements, may likewise occur in the metazoa (connective tissue of a salamander larva). The second divisionary reduction is illustrated in fig. 5, *c*. The granule contiguous to the blepharoplast reduces its bulk by simple division.

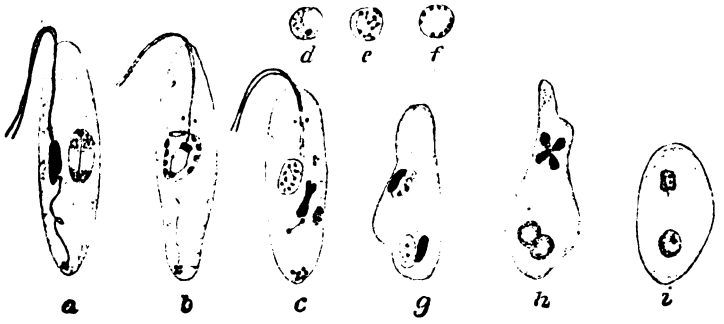


FIG. 5.

The nutritive nucleus swells before the reduction; its chromatin collects at one side in the form of a crescent, and its interior body becomes very distinct (fig. 5, *d*). Later on the interior body divides and four groups of four appear next to it, which are divided up by the two following divisions (fig. 5, *e*).

Before the second division one may see very distinctly the divided caryosoma (interior body) in the form of a central spindle, and at each side of which four chromosomes lie (fig. 5, *f*, *c*).

The divisionary reductions behave here as in those trypanosomes examined by Schaudinn; thus as complete but abortive divisions in which all the parts of the complicated heteroplastide take part, but of the products of which only the two nuclei advance to subsequent fertilisation, while the other organoids probably degenerate (basal granules, intermediate body), as the one or both nuclei are able to regenerate everything anew.

The fact of the reduction of the blepharoplast appears to be of particular importance in zytological speculations. The flagellates here described are true heteroplastides; their blepharoplast is nucleus-like and equally as potent as the central nucleus; the latter has, however, in no way deteriorated, but still represents a real centro-nucleus. We might perhaps compare the blepharoplast to a centrosome and its interior body (caryosoma), which like the metazoa (Boveri) divided first (fig. 2, *c*).

The blepharoplast is also a cyclical formation (Boveri) in a certain sense which, somewhat after the manner of an echinus-centrosome in cyst formation or in auto-copulative parthenogenesis, is exposed to a wholesale reduction at the decline of its function. Before fertilisation it is reduced like the centrosome in the spermatogenesis of the metazoa (*Helix*, distal part of the centrosome).

FERTILISATION.

The fertilisation of our flagellata takes place by means of the two individuals lying side by side and then amalgamating, whereby the two blepharoplasts and nuclei each unite to a single formation (fig. 5, *h*, *i*). In fig. 5, *h* the two blepharoplasts before the amalgamation undergo a belated last reducing division.

Fertilisation in this form is combined with the formation of a permanent cyst (fig. 5, *i*), the further fate of which I have not yet been able to follow.

Under unfavourable circumstances, such as when the host is fasting or its intestine is undergoing desquamation and the "membranous funnel" does not envelope the intestinal contents, the gregarine or worm-like forms migrate through the epithelium of the intestine into the abdominal cavity and into the ovaries; of these forms a few (females) make screw-like or curved movements. By penetrating the ovaries thus it is possible that the *next generation of flies* may be infected.

INFECTION POSSIBLE IN A THREEFOLD MANNER.

(1) The indifferent individuals form the mucous cysts described above, and in this manner are ejected with the fæces into the open (damp windows, foods, manure, &c.), and are again taken up by other flies which lick over everything with their sucking proboscis.

(2) The sexually differentiated forms copulate and form a permanent cyst which, in the same way as the mucous cysts, may cause infection.

(3) Sexually differentiated forms penetrate into the ovaries, where they undergo autogamy and infect the next brood. Our parasites accordingly appertain to the category of parasites that are "inherited." Germinative infection has been confirmed by Siegel in the *Nozema bombycis*, which is a parasite of the silk-worm; in a *Zoochlorelle* which occurs in the ova of the sponge, *Spongelia pallescens* (F. E. Schulze); moreover, in the *Hæmogregarina stepanovi*, in the ova of the leech; the same holds good in regard to the *trypanosoma of birds*, and in malaria, according to the recent investigations of Schaudinn. In addition, the germinative infection of the ova of the tick in the parasite of Texas fever, as well as the eggs of an acarus, which is parasitic in a lizard and transmits the hæmosporidia of the lizard (*Caryolysus*) (Schaudinn), are of pathological importance.

In cover-glass streak preparations of fresh fly-eggs which were washed in distilled water, I found the above described *yeast fungi* and *bacteria*, which were later confirmed in the intestines. Escherich is also of opinion that the blastomyces (that is, a parasite in the intestinal epithelium of the small beetle *Anobium paniceum*, which stands in symbiotic relationship to the beetle [Karawaiew, Escherich]), is transmitted by means of the eggs from generation to generation (compare Schaudinn's statements in regard to the Culicidæ in the work recently published in this Journal).

The brood is not always infected in all infected animal hosts; of twenty infected flesh-flies I found there was only one the brood of which was also infected. Moreover, all the larvæ of the same fly are not necessarily infected; this phenomenon may have some connection with the various stages of maturity in the ovarium of the insect, as, naturally, the invasion once accomplished, would by preference affect the more mature eggs unprovided, however, with the chorion.

The parasites first of all remain in the copious

vitellus of the ova, where they can be demonstrated alone in streak preparations; they are then, however, introduced into the interior in advancing development, proceeding from the anterior and posterior parts of the germinal streak which, according to Noak, form the mid-gut.

In such later stages of development of the egg of the fly they, just like parasites retained in the intestine of the mother-creature, undergo remarkable changes of nucleus, which in all essentials resemble those of the *Bodo lacertæ* or of the *Trichomatrix* in autogamy.

Summary of Propagation Processes.

In order to obtain a rapid survey, we shall divide them in three categories and briefly describe all.

(1) The *Blepharoplast* (the kinetic nucleus) undergoes two divisions of reduction; two nuclei originated from the division copulate, while the central nutritive nucleus degenerates more or less rapidly. The plasma of this individual is very light and stains light blue after Giemsa. We term these individuals *males*. The autogamy of the blepharoplast is therefore here connected with an *Etheogenesis* (which by parthenogenetic analogy may be termed the unmarried young man).

(2) The central nucleus alone undergoes two divisions of reduction, the descendants of which are subject to autogamy. The blepharoplast may again divide, but mostly remains in the reduced condition, or it degenerates. Autogamy is connected with a parthenogenesis—female individuals.

(3) Both nuclei undergo the same auto-copulative processes or simply divide—indifferent cells.

(1) In the first case (*Etheogenesis*) the blepharoplast divides in a heteropole manner; the compact spindle is obtuse at the one pole and pointed at the other. In this process a different development may even be confirmed of the one intermediate piece and the basal granule that appertains to it (fig. 6, *a*). Another division follows this one, in which now the two nuclei auto-copulate (fig. 6, *b*, *c*). The chromatin of the central nucleus agglomerates early, vacuoles occur in the nucleus and it degenerates (fig. 6, *a*, *b*); sometimes, however, this nucleus makes a start to a division, its interior alone dividing four times (fig. 6, *c*). The processes in the intestine of the parent creature and in the intestinal tract of the embryo are similar in all essentials, only that here mostly the individuals remain in the complete gregarine stage, whereas in the former case some still possess a flagellum which only later becomes reduced. One, however, sometimes finds more or less strongly developed flagellated forms in the vitellus of the eggs. Later on the individuals become rounded off and swell considerably, while the blepharoplast undergoes numerous divisions (fig. 6, *d*).

As from these forms, however, a nutritive nucleus perishes, they appear to degenerate sooner or later, for I never found any further stages of development.

(2) In the second case the blepharoplast is only partly reduced (fig. 7, *a*), or not at all, in parthenogenesis; on the other hand, the nutritive nucleus divides into four nuclei, of which two auto-copulate, while the other two reduction nuclei become smaller (fig. 7, *b*), and finally disappear altogether.

In a nucleus fertilised in this manner there springs up a constantly growing granule; stained after Giemsa, it stains light blue, and appears as a plastin-like mass which, constantly growing, forces the granular chromatin to the periphery (fig. 7, *c*.) At later stages of development a large vesicular nucleus is found in the dark protoplasm; it is very pale, and possesses, mostly in the centre, a small interior body

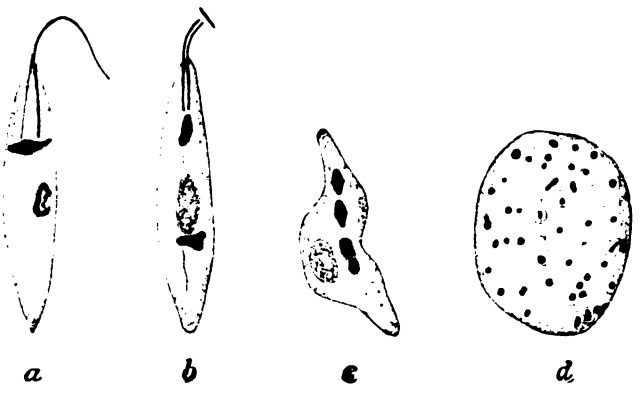


Fig. 6.—(*a*) The nutritive nucleus degenerates; heteropole spindle of the blepharoplasts; (*b*) second reduction division of the blepharoplasts; (*c*) autogamy of the same below; (*d*) etheogenesis.

or caryosoma (fig. 7, *d*), which, under certain circumstances, may also be divided heteropole. This large nucleus subsequently divides several times, and each time the chromatin as a rule agglutinates to three sausage-like masses. The blepharoplast divides several times independently (fig. 7, *e*), or it degenerates (fig. 7, *f*); granulations that stain red after Giemsa appear in the protoplasm (fig. 7, *e*, *f*).

(3) In the indifferent cells the two nuclei divide, as do the blepharoplast and the central nuclei, evenly but independently one of the other, and finally rosette-shaped new indifferent flagellates, which possess a nutritive nucleus and a blepharoplast, are divided off from the periphery (fig. 7, *j*). These stages are found frequently early in the uninjured intestine as well as in the abdominal cavity of the embryo, as they are of less complicated development than other forms, and thus fewer individuals perish.

In between the typical modes here described there are a number of other transitions and modifications. A few particularly characteristic appearances must be mentioned here. Under some circumstances only one or the other nucleus can accomplish its autogamy, while both are subject to further divisions, so that finally polynuclear cells with hybrid characteristics are formed (fig. 7, *g*, *h*). The consequence is that, according to the analogy of the organs and cells, there ensues a combat of the organoids in the cell which terminates either by (*a*) a portion perishing or (*b*) being ejected. These processes of elimination are likewise very interesting. Either some protoplasm with superfluous blepharoplasts or with the subservient nutritive nuclei is cast off in the form of a humpy protuberance, whereupon a membrane, stainable red after

Giemsa, is secreted on the periphery of the cells (fig. 7).

That part of the plasma that is extruded clings for some time to this kind of cyst. Should, however, the protoplasma of both portions be more equal one part degenerates, within the "cyst" (fig. 7,*i*), while the other portion produces normal individuals.

obtuse end forward.] The blepharoplast first divides in heteropole style asymmetrically, and then degenerates entirely. The process includes copulation, which has partly been observed in fresh preparations. Autogamy appears to take place (as is also the case in herpetomonas [fig. 7, *b*]) in the liver, and more rarely in the spleen.

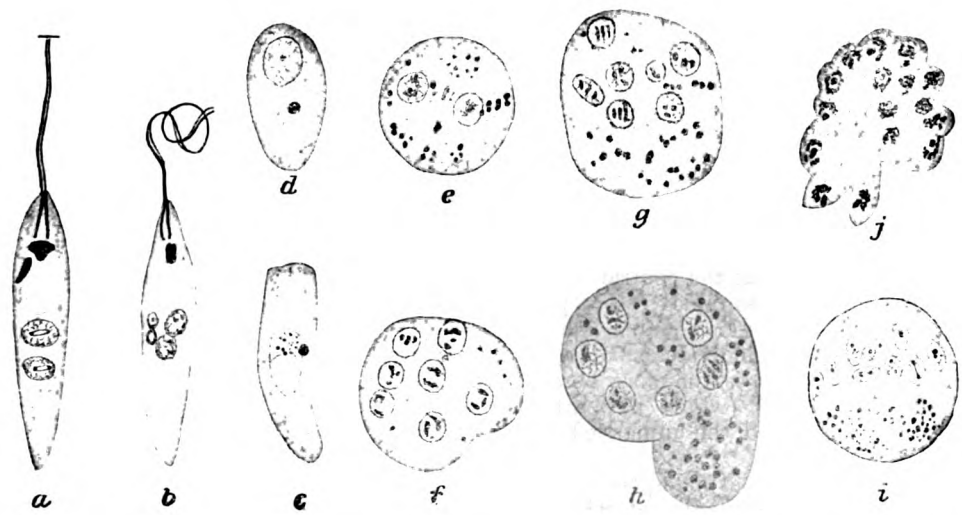


FIG. 7.—(*a*—*i*) Parthenogenesis. (*a* and *b*) Reduction, division, and autogamy. (*c*, *d*, *e*) Formation of the resting stage. (*e*) Increase of both sorts of nuclei. (*f*) Degeneration of the blepharoplast. (*g*, *h*) "Hybrid" stage of rest. (*h*) Tightening off of the blepharoplast with the protoplasm, formation of a membrane. (*i*, *j*) Degeneration of the blepharoplast within the "cyst," development of the females. Division of the interior body within the nucleus without chromatin. There is the indication of a heteropole at four places. The new blepharoplast is probably formed by the exit of the one part.

The processes are the more complicated by the fact that the protoplasm equally is subject to two formations appearing—namely, as a light-coloured protoplasm rich in fluid and poor in reserve material, as well as a dark-stained close protoplasm rich in reserve material. If we assume that the "agglomeration and thickening of the chromatin in the blepharoplast as well as the light protoplasm poor in reserve material" as characteristic of the male principle, and the "fine distribution of the chromatin in the large nutritive nucleus as well as the dark protoplasm rich in reserve material" as indications of the female properties, we are able, after minute observation of the separate resting stages, to come to the conclusion that the ubiquitous nucleus is not always brought equally into the correct place as to its protoplasm, so that frequently the large light nuclei are seen in the light protoplasm and *vice versâ* (fig. 7, *g*, *h*). These mistakes are rectified by the one portion causing the other to extrude when the corresponding assimilation of dissimilation alters the character of the protoplasm or degenerates.

I have not hitherto been able to confirm the manner of development of the flagellate apparatus.

I observed a two-fold reduction which also affected the blepharoplast, and which was combined with a formation of groups of four in the female individuals (stainable light blue after Giemsa) in *Trypanosoma brucei* (from guinea-pigs.) [These parasites, in contradistinction to *T. lewisi*, mostly swim with the

Notes and News.

HOSPITAL FOR STRANGERS IN ROME.—On the Coelian Hill in Rome the foundation of a new hospital for strangers have been laid. When completed the hospital will be under British protection, and will be available to people of every nationality, who will have the privilege of being attended by their own doctors. The hospital will be a great boon to the many foreign residents in Rome.

PROTOZOON-LIKE bodies have been found in vesicles produced in scarlet fever patients in five cases out of eighteen examined. Dr. Charles W. Duval has published this statement in the *University of Pennsylvania Medical Bulletin* for November. Mallory, in 1903, published a description of protozoon-like bodies he met with occurring in the epidermal cells, lymph vessels and spaces of the skin of scarlet fever patients

DR. JAMES M. BEATTIE, of the Pathological Laboratory, Edinburgh University, claims to have found the *Micrococcus rheumaticus* in the synovial membrane of a patient suffering from acute rheumatism, and recovered the organism from the vegetations of the endocarditis occurring in rabbits. This observation tends to confirm the announcement made in the *British Medical Journal* of January, 1904. by Drs. Beaton and Walker.

Review.

BERI-BERI, ITS SYMPTOMS AND SYMPTOMATIC TREATMENT. By Percy Netterville Gerrard, M.D. 8vo, pp. 95, with seven diagrams. London: J. and A. Churchill, 1904.

Dr. Gerrard, from experience gained in Kwala Lumpor, in the Federated Malay States, where he served as surgeon to the District Gaol, has produced a useful book on beri-beri. All that is known concerning the disease, its symptoms, complications, varieties and treatment, are clearly described. A smaller work, extending to fifty-three pages, by the same author, an extract from the above, deals with the clinical aspects of beri-beri. Both works are valuable, and should be obtained and studied by students of tropical medicine.

Remedies.

CHRONIC OTORRHŒA.—Ménière recommends: wash out the meatus with hot water, and then paint the walls with carbolic acid crystals 1 part, pure glycerine 5 parts.—*Nouveaux Remedes*, July 24th, 1904.

BLEEDING PILES.—Useful applications are: very hot water or very cold water, with or without 5 per cent. of alum. Pounded ice in a gold-beaters' skin may be introduced into the rectum! A valuable hot enema is carbolic acid 4½ grains, glycerine 7 drachms, boiled water 7½ ounces. A plug of cotton moistened with 50 drops adrenalin (1—1,000) mixed with a tablespoonful of water, kept in rectum for ten minutes.—*Presse Medicale*, July 28th, 1904.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Ankylostomiasis in Collieries in Europe.

The Committee appointed by the British Association to enquire into "the probability of ankylostoma becoming a permanent inhabitant of our coal mines in the event of its introduction," has published an interim report which pertinently indicates the dangers likely to result were the parasite to obtain a hold upon the miners. As illustrating what has taken place by the introduction of the *Ankylostomum duodenale* into mines and collieries, Dr. Thomas Oliver's paper on "Miners' Worm Disease," in Westphalian and Hungarian mines, and published in the *Transactions of the Institution of Mining Engineers*, brings the severe nature of the ailment prominently forward. In one year in the town of Bochum, in Westphalia, with a population of 70,000, no less than 3,000 persons suffered from ankylostomiasis. Within a period of two years ankylostomiasis was responsible for a monetary loss of £100,000 in Westphalia alone. The heat and moisture prevalent in mines, especially where water is freely sprayed about to counteract the dust arising from the coal, are favourite media in which the ova develop into the larvæ of the ankylostoma.

The prophylactic measures recommended are: (1) The mines ought to be kept dry and cool. (2) Medical inspection and constant microscopic examination of the stools of miners. (3) Men suffering from ankylostomiasis must be prevented working in mines. (4) Latrines, with ample accommodation and carefully constructed, must be placed in the mines and the workers compelled to use them and not allowed to defæcate indiscriminately on the ground. The receptacles must be daily emptied and disinfected. In British mines it is necessary that all foreign workmen be medically inspected before being allowed to go to work. Unless prophylactic measures are taken it is probable that ankylostomiasis, which has already appeared in some Cornish mines, may become general, as the average temperature (about 70° F.) of mines in this country is quite sufficient to favour the development of the parasite.

Australia.

PREVENTION OF TUBERCULOSIS.

A branch of the British Association for the Prevention of Consumption has been formed in New South Wales. A city dispensary for Consumption is contemplated; but there is an inclination to thwart the formation of such an institution on the ground that it is unnecessary to multiply hospitals, there being already several Consumptive Homes in the Colony.

On October 14th, 1904, the New South Wales Branch of the British Medical Association advocated the compulsory notification of pulmonary tuberculosis and the erection of hospitals for advanced cases of phthisis.

Diphtheria.

The prevalence of diphtheria in New South Wales is attributed by the Chairman of the Board of Health, Dr. D. A. Gresswell, to improper ventilation and overcrowding of the schools.

Lunacy in New South Wales.

On December 31st, 1903, there were 4,950 officially notified cases of insanity in New South Wales. This is an increase of 263 upon the number returned for 1902. The average annual increase for the last twenty years has been 127.

Diphtheria in India.

MALLANNAH, S. *British Medical Journal*, December 31, 1904.—In Hyderabad only three cases of diphtheria occurred in the practice of Dr. Mallannah during a five years' experience. The specific bacillus was proved to be present by reliable tests, and albumen and renal casts were present in all three patients. Diphtheria in sporadic form evidently occurs in tropical countries.

The Health of India.

In the European army in India during 1902, the chief cause of sickness and admission to hospital was

venereal disease; no fewer than 281 per 1,000 of the total sickness being due to venereal complaints. The number of men constantly in hospital from these ailments amounted to 1,431.

Malaria was accountable for 247 per 1,000 of the total cases of sickness amongst British troops.

Venereal disease and malaria caused together 49 per cent. of the total sickness rate.

Enteric caused the greatest mortality, the death-rate from this disease being 4·29, a higher total than during 1901 by 1 per cent.

In the Native army *malaria* contributed 38 per cent. of the total admissions to hospital. *Venereal* diseases accounted for only 33 per 1,000 of the admissions, as compared with 281 per 1,000 amongst British troops. *Enteric* fever gave a death-rate of only 0·10 per 1,000, as compared with 4·29 amongst British troops. *Pneumonia* caused one-third of the total deaths in the Native army, being four times more than amongst British troops.

During 1902, amongst the general population, the chief causes of death were: Cholera 224,135, ratio per 1,000, 1·01; small-pox 115,603, ratio 0·52; fevers 4,291,952, ratio 19·17; dysentery and diarrhœa 266,869, ratio 1·06; plague 445,293, ratio 2·0. Total deaths from all causes 7,112,336, ratio per 1,000, 31·49.

Civil Hospitals and Dispensaries.—During 1902, 2,459 hospitals and dispensaries were open to the public, at which 372,780 in-patients and 24,039,114 out-patients were treated.

Plague.

PREVALENCE OF THE DISEASE.

India.—During the week ending December 10th, the deaths from plague numbered 17,439.

South Africa: Port Elizabeth.—During the weeks ending December 10th and 17th, fresh cases 2 and 0; deaths 0 and 0.

Mauritius.—During the week ending December 29th, 1904, and January 5th, 1905, fresh cases 19 and 9; deaths 11 and 7.

Hong Kong.—During week ending January 7th, fresh cases 1; death 1.

British East Africa: Mombasa.—On January 2nd, 1905, plague appeared at Port Florence: cases 6; deaths 4 to date.

Russia.—In Cossack and Khirgis villages, 33 miles from Guriev, pneumonic plague was reported on December 29th: 200 deaths to date had occurred.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

Actinomycosis in Egypt.

S. VORONOFF. *Gazette des Hopitaux*, November 22, 1904.—The patient was a native, aged 42, with a growth of sixteen years' duration, which had formed three fistulæ discharging thick sero-pus into the mouth; the openings were depressed and clearly defined, their edges were not indurated. The discharge contained mycelium, but no coloured bodies. The growth extended as far as the angles of the jaw on both the inner and outer aspects, the mouth could only be opened half a centimetre, the tongue and skin were normal, the glands were not enlarged.

An incision was made a little above the lower border of the jaw, and the growth separated from the jaw, which was softened in places where characteristic grains of actinomycosis were found; these spots after curetting were irrigated with iodine solution. Two openings were left for drainage and daily iodine irrigation, 5 grammes (60 grains) of iodide of potassium, were given daily. In six weeks discharge had ceased and general health improved. The article is illustrated by engravings of the case and also of cattle, of which it is said 3 per 1,000 are affected with actinomycosis.

Actinomycosis in South America.

CRANWELL. *Revista de la Sociedad Médica Argentina*, fas. 1, 1904.—Of animals slaughtered in Buenos Ayres, 1 per 1,000 had actinomycosis; the proportion was higher in Monte Video. In Uraguay it is very frequent. In Chili it is often found in cattle and in the lungs of pigs. In Brazil it has occurred in man. A monograph by Lignières and Spitz is referred to, describing an epidemic in cattle of actino-bacillosis, affecting mainly the skin, sometimes only the maxilla; the glands were swollen. The pus contained no filaments, and did not stain by Gram.

Anæmia in Ankylostomiasis.

ALESSANDRINI. *Il Policlinico Sezione Medica*, December.—The procedure was to wash the worm while alive, dry it with filter paper, isolate the cervical gland, tease it into fragments, and with these mix blood from himself and other persons. Under the microscope on a warm stage, near the portions of gland were seen the remains of red corpuscles, at a greater distance there were distended and crenate corpuscles, at the periphery of the field leucocytes and normal red corpuscles. The article contains a description and picture of the cephalic and cervical glands. From observations on the cervical glands of ankylostoma from various animals, the size of the gland varies; in the worms from man and mammals it is about half the length of the body; in ankylostoma from the boa constrictor (*U. boae*) the gland is almost as long as the worm. The size of the gland is proportionate to the vital resistance of the host. The gland secretes a poison which acts on the blood and causes the anæmia. The loss of blood by suction and subsequent oozing only aggravates the disease.

Ankylostomiasis in the Dutch East Indies.

In *Gen. Tijdschr.*, N. I., 44, two views as to treatment are given. One is to treat with thymol all who pass ova, because the early symptoms may escape detection, especially in natives. This lessens the number of patients, and especially the number of worms passed. The other view is that it is unnecessary to treat all who pass eggs, because a small number

of worms do not cause symptoms, and it is dangerous for thymol to be administered by incompetent persons, but in plantations and mines all cases can be treated.

Cancer and Tabes in Brazil.

SODRE. *Revista Medica de S. Paulo*, November 15, 1904.—Cancer is very rare; in certain localities the cases have increased in recent years. The frequency varies with the latitude, being rarest at the Equator. Tabes and general paralysis of the insane are very rare, disseminated sclerosis and chronic myelitis are frequent. The climate influences both diseases, modifying their evolution and the progress of syphilis, which is very common. The diseases are rare because visceral syphilitic manifestations are rare.

Filaria Perstans and Trypanosoma in the Chimpanzee.

In the light of our present knowledge, it is interesting to recall to our readers the fact that in June, 1900, Dr. Hans Ziemann discovered the embryos of a filaria in the blood of one chimpanzee, and trypanosoma in that of another. The investigations were undertaken in the Congo Français, and on repeated examination both day and night, the embryos of the filaria were always found to be similar. Sir Patrick Manson examined the preparations sent to him by Ziemann, and agreed with him that the parasites were morphologically identical with the embryos of *Filaria perstans*. The observation is of great theoretical interest, as hitherto *Filaria perstans* has never been found in any vertebrate animal but man, and Manson, in a letter to the investigator, directs attention to the analogy it presents in regard to the parasites of human malaria. The chimpanzee examined never showed any symptom of disease. In examining another chimpanzee, Ziemann found a few *Trypanosoma* in the blood. They bore a great resemblance to the *Trypanosoma Lewisi*, Kent, illustrated in Döeflin's book on the "Protozoa" (with an enlargement of 1,000), the only difference being that the flagellum was considerably shorter. The undulating membrane was distinctly visible, but unfortunately Ziemann could not obtain permission to again examine this chimpanzee at a later date.—(*Archiv. für Schiffs-und Tropen-Hygiene*, vol. vi. 1902.)

Leprosy.

ROMER. *Janus*, December.—The bacillus is found in scrapings from the apparently normal skin from the lobe of the ear, from nose, tongue, pharynx and larynx, from scrapings of the nails of the hands and feet, in the urethra, under the prepuce, and in the saliva. It is early found in the roots of the hairs of the eyebrows, of the neck and of other hairs, excluding the scalp. As a diagnostic point it is found in sebaceous secretion at the commencement of the disease. The scrapings, hairs, and other tissue are pounded in a mortar with water, this is centrifugalised and stained, enabling the bacilli to be found when by ordinary means their detection is difficult.

Medical Notes in Central Brazil.

MANSFELD. *Muench. med. Wochn.*, No. iii., 1904.—When the expedition lost their salt, notwithstanding the use of ashes from the bones of fish and ashes from vegetables, digestive troubles began after three weeks. When salt was again taken, for the first eight days a small quantity in the food caused violent diarrhœa. Four tribes were met suffering from an epidemic of *catarrhal bronchitis*, introduced by three Europeans infected with influenza. Ranke's account was confirmed of a man from Rosasio with *gonorrhœal ophthalmia* infecting a whole village with the disease.

In ten weeks at Cuyaba in Matto Grosso, many cases of old and recent *malaria* were seen in rubber gatherers, twenty-eight cases of *leprosy*, three cases of *elephantiasis* in Negroes; some cases of a skin disease called bubas, which were diagnosed as *frambœsia*. Some cases were provisionally diagnosed as *beri-beri*. *Intestinal worms* were common, and *acute* and *chronic eczema*.

Snake-bites in Brazil.

BASSEWITZ, in *Muench. med. Wochn.*, No. xix., 1904, gives an account of his method of treatment, which consists in killing the snake, extracting the liver with all possible antiseptic precautions, pounding it in a mortar, adding slowly 50 to 100 cc. of a 7 per cent. chloride of sodium solution, filtering the solution and injecting into the flanks. This soon becomes putrid; antiseptics destroy its action. Its use is only recommended when the serums of Vital Brasil of the Pasteur Institute, S. Paolo, cannot be obtained. One is antitoxic to the bites of botrofi, the other to the bites of crotali; when in doubt, an equal quantity of both is injected. A 1 per cent. solution of permanganate of potash injected is commonly used.

Trypanosomiasis.

GUENTER and WEBER. *Muench. med. Wochn.*, No. xxiv., 1904.—The symptoms were noticed in March, 1902, when a European, aged 33, was in Kamerun, South Africa. There were recurrent irregular rises of temperature with parasites in the blood, hæmoglobin was reduced to 60 per cent., mononuclear leucocytes were increased, fugitive local œdema, exaggerated irritability of the cutaneous vessels (marked dermatographia), painful swelling of one side of the head, followed by loss of hair, a rosy macular eruption, circumscribed and without itching, the liver and spleen were increased. Sometimes there was dyspnœa; the pulse was rapid, even in April, 1904, whilst the patient felt well it varied from 116 to 124.

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EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Medicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate. Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular.

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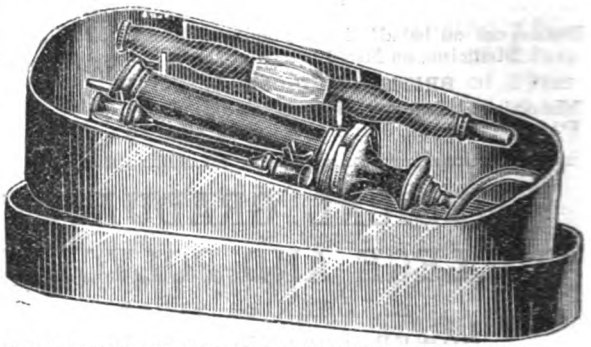
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ON THE ETIOLOGY OF AINHUM.

By L. E. Ashley-Emile, L.R.C.P., L.R.C.S.Edin., L.F.P.S.Glas.

Mopra, Zambesi River, East Africa.

Ainhum is usually defined in our text-books as a disease of the toes, usually the little, and characterised by a furrow in the line of the digito-plantar fold; this gradually deepens, the end of the toe enlarges, and usually, without inflammation or pain, the toe falls off.

In reviewing the geographical distribution of this obscure disease, it appears to have spread widely over the African Continent, and is met with particularly on the West Coast, especially among the Negroes of the Krao tribe, who are very prone to it; it also occurs in South Africa, and a few cases have of late been reported from there by Dr. Muir. The disease has been described in Nossi Né, an island on the north-west coast of Madagascar, and sporadic cases have been seen in Réunion, Algiers, Cairo and Suez. Ainhum is not so prevalent in East Africa (Mozambique) as one is apt to suppose. After an examination of some 500 Zambesi natives of mixed tribes working on the sugar estate here, I have met with only three cases in all in members of the Dombé tribe, a brief description of which will be of interest, both from a geographical as well as from an etiological point of view.

Case 1.—K., Zambesi Negro of Dombé tribe, occupation, labourer, 28 years of age, came to the local dispensary for treatment. Patient fairly well developed, has always been in good health. Is unable to state definitely when his present complaint commenced, has noticed it for many years, began as an incomplete circular shallow tightening in of the skin, producing a furrow on the inner and lower aspect of base of right little toe corresponding with the joint; has always been painless, and never prevented him from pursuing his usual avocation until four days ago, when a fissure formed at the constricted part, causing great pain, for which he sought treatment. His brother is also suffering from a similar complaint. Patient does not recollect either of his parents ever having a similar disease. Has no hereditary history of leprosy. He has never had any venereal disease, nor does he remember ever injuring his toe. Has always been going about bare-footed, and has not worn toe rings. He has always lived in these parts.

Present State. — Patient is of medium height, about 5 ft. 5 in., fairly well developed, and otherwise in good health; no signs of arterio-sclerosis can be detected. Temporal arteries not prominent, and radial has no tendency to thickening, and has quite a normal feel. Pulse of normal tension and moderate volume. Has never had syphilis, and there are no evidences of that disease. Skin of body is quite smooth, without marks of any eruption. A careful examination was made for leprosy with a negative result; nerve trunks not thickened, and no patches of any kind perceptible; no change in the motor and sensory functions detected, viz., superficial and deep reflexes elicited and found normal. Muscular sense tactile, pain and temperature impressions intact.

Facial Appearances.—Skin of forehead and eyebrows furrowed, nose broadened out, cheeks heavy, lips and ears thickened, entire countenance looks bloated and greasy.

Examination of Affected Part. — Right little toe reveals the usual characters of the disease: toe bent inwards, and a groove is seen on the inner and lower surface of the base of toe, close to the fold between the toe and sole of foot; dorsum and outer aspect unaffected, distal portion of toe swollen, round in shape, resembling a small potato, nail still attached, small, dry and furrowed, occasional and slight pain at rest, groove and contiguous surfaces tender when touched with a probe. On separating the toes a dry, narrow fissure corresponding to cutaneous groove is apparent, and a probe can be passed into the joint; the fissure presents an ulcerated surface, with a fœtid, purulent discharge; dorsum also ulcerated. Pain severe when toe is moved, in consequence of which patient ties it to the fourth toe in order to obviate the movements of the toe and prevent it from touching the ground. Patient is flat-footed.

Case 2.—J., Zambesi Negro, of Dombé tribe, occupation, labourer, about 30 years of age, and brother to previous case.

Present State.—Patient is otherwise in good health, of strong physique. Has no arterio-sclerosis, nor any symptoms of leprosy or syphilis. Manifests an early stage of the disease, the usual constricting band and groove are present but no fissure, and therefore no pain. Has no inflammation; toe is bent inwards, and at the groove the skin is thickened and indurated; distal portion of phalanx is not swollen and enlarged to any considerable extent. Patient is flat-footed; nail normal, sensory and motor functions intact.

Facial Appearances.—Same as previous case.

Case 3.—R., Zambesi Negro, of Dombé tribe, occupation, labourer, about 40 years of age. Has always been in good health, except for a similar disease which occurred in left foot some years ago. He is unable to state when the present complaint commenced, says it began in the usual manner. No hereditary tendency to leprosy or ainhum can be obtained; has never had syphilis, and shows no traces of that disease. Traumatic and mechanical history negative. Has always been going about bare-footed, and has never worn toe rings, and has always lived in these parts.

Present State.—Patient is of fairly strong physique, about 5 ft. 4 in. in height, and otherwise in good health. Has visible and marked evidences of arterio-sclerosis, temporal arteries prominent, dilated and tortuous, and the radial feels stiff and rigid when rolled beneath the fingers, there is increased and persistent high tension, pulse wave slow in its ascent, enduring and subsiding slowly in the interval, between the beats the vessel remains full, and firm pressure does not obliterate the pulse, which can be felt beyond the point of compression. Left ventricle slightly increased in size, apex-beat is within the nipple line, impulse heaving and forcible, and second aortic sound clear and accentuated. Has never had syphilis, and has no evidences of that disease. Skin

free from all marks of eruptions. Special attention was directed to finding symptoms which might point to leprosy, but without result. Perception of pressure, touch, pain and temperature intact, motor reflexes, both superficial and deep, normal.

Examination of Affected Part: Right Foot.—Little toe presents the usual characters of advanced ainhum, toe bent inwards, a groove extends nearly round the toe, except at its outer part; distal phalanx swollen and rounded in appearance; nail dry and sclerosed. On separating the toes a deep, narrow fissure is disclosed, bounded by indurated skin, fissure ulcerated and emitting an offensive purulent discharge; severe pain elicited on touching the part or moving the toe; sensibility of terminal phalanx not diminished, all other toes normal. *Left Foot:* Shows signs of previous ainhum, second toe missing, as if amputated at the metatarso-phalangeal joint, little toe deformed, twisted inwards and of diminutive size; no symptoms of inflammation or ulceration present.

Facial Appearance. — Same as other two cases. Patient is flat-footed.

Etiology.—Nothing is known as to the true nature of ainhum, and of late little progress has been made towards arriving at any satisfactory conclusion as to its causation, with the result that at the present time ainhum occupies a paramount position in the category of tropical diseases of uncertain nature.

The African race is said to be specially predisposed to this complaint, on account of the natives being flat-footed, and in consequence the flexor tendons of the two small toes have an oblique attachment. Such a direction of the flexor tendons is indeed a strong predisposing cause, yet some other factor must be present, for ainhum would be much more prevalent all over Africa than at present, and not localised to certain parts, such as the West Coast and a sporadic distribution in other localities; besides, natives of all tribes would suffer equally, which is not the case, since on the West Coast the Krao tribe is more prone to it than any other, and in these parts the Dombé tribe.

Sex.—Men are more subject to this disorder than women. Adult males, between 30 and 40 years of age, are most often affected; children are seldom attacked.

Habits.—It has not been met with in those accustomed to boots, or in persons in a favourable condition of life.

Occupation.—Carriers of burdens are most subject to it, owing to the fact that greater strain is applied to the leg muscles in maintaining an erect position.

Exciting Causes.—Several suggestions have from time to time been made, the most important are as follows:—

(1) "That ainhum is a form of scleroderma." There are many objections to this theory, viz., scleroderma affects females more than males; the seats of election are usually the arms and neck and along the course of nerves; besides, the lesion occurs in patches with change of colour in the skin, either areas of pigmentation or of complete atrophy producing leucoderma.

(2) *Mechanical Theory.*—"That ainhum is produced by ligature or the wearing of toe rings." The previous history and the habits of the nations disprove any such suggestion.

(3) *Traumatic Theory.*—"That it is produced by wounds inflicted on bare feet in walking through grass or jungle." It is difficult to understand why the little toe should invariably be wounded, which, owing to its situation and size, is more protected than the other toes; besides, the body weight during locomotion is felt with greater force by the three inner toes, which are, in consequence, subjected to greater pressure and are, therefore, more likely to meet with injurious results from any obstacle than the little toe.

(4) Finally, the much-debated theory "whether ainhum is a manifestation of leprosy" has not met with general acceptance, notwithstanding the repeated statements of Zambaco Pascha, the specialist in leprosy. His weighty opinion, however, cannot be lightly negatived until we are in possession of more conclusive proofs as to the contrary. Personally I am inclined to attach much importance to this suggestion and to regard ainhum as a modified form of that disease, occurring in persons not the subject of leprosy (since leprosy and ainhum have not been seen in the same person) but in persons of a "leprous diathesis." In a vast country like Africa, where leprosy is universal, lepers, particularly in the Tropics, enjoy the same liberty as the remainder of the population; they mix freely with healthy persons, and are in no way debarred from entering into social contracts. It is quite probable the resulting offspring of such unions may develop the disease in a mild form should one of the parents be healthy, and in the succeeding generations no such manifestation may occur. Though the descendants of the latter be, to all outward appearances, free from any of the suspicious signs and symptoms of the original disease, they have in consequence inherited an unhealthy nerve influence, which fact, taken in conjunction with the various etiological factors, is of great importance in the production of ainhum. I am inclined to believe the condition is caused as follows: In the carrying of heavy burdens the leg muscles are subjected to great strain, the injurious effect of which is most felt by the flexor tendon of little toe, owing to its oblique attachment, which, in consequence, is compelled to act at a great disadvantage; the enfeebled nerve supply from over stimulation undergoes slow atrophy of its fibres, leading to fibroid degeneration at the seat of muscular attachment round the joint. On contracting the tightening in and puckering of the skin is produced, with inward rotation of the toe. Strangulation of the vessels follows as a natural result, first the arteries, the large veins of the hypodermis, cutis and venous capillaries become dilated and a potato-like prominence of the distal phalanx, so characteristic of the disease, takes place.

Remarks.—In the above cases this particular leprous diathesis which I have endeavoured to describe was well manifested in the facial appearances, and the close family relationship in the first two cases affords strong presumptive evidence as to the antecedent disease, viz., leprosy and its transmissibility in a modified form, which we now recognise under the appellation of ainhum.

Business Notices.

1.—**The address of the JOURNAL OF TROPICAL MEDICINE** is Messrs. BALE, SONS & DANIELSSON, Ltd., 83-91, Great Titchfield Street, London, W.

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THE

Journal of Tropical Medicine

FEBRUARY 1, 1905.

THE COLONIAL MEDICAL REPORTS.

WITH this issue of the Journal we publish *Selections from the Colonial Medical Reports* of 1902-1903. From time to time we have given extensive abstracts of these valuable reports ever since the Journal first appeared; but it is our intention to systematise the publications. In the centre of each Journal will be found four to eight pages devoted to these selections, separately numbered and issued, so that if it is desired to bind them separately at the end of the year, it may be done conveniently and readily.

We have long felt that the elaborate medical reports carefully prepared by competent medical men holding high and responsible positions in the Colonial Medical Service should be made much more widely known than they hitherto have been. Blue books and Government reports are too often looked upon as merely furniture for libraries, or at most but stores of knowledge referred to by statisticians or compilers of figures. No one, however, who has looked into these reports, or who has studied even casually the excellent "selections" which have been hitherto issued by the Colonial Medical Department, can have failed to appreciate the enormous amount of valuable clinical, pathological, meteorological and hygienic information contained in them. From every quarter of the globe they come, each one with its special interest. The epidemiologist will find in them a prolific storehouse of knowledge to hand. It will be brought home to him that diseases prevalent in one district are unknown in another. Here filaria prevails, there malaria exists, the one perhaps to the exclusion of the other; here plague is epidemic, there in a neighbouring district the disease claims only a few victims. Diseases hitherto unknown in a district become prevalent for the first time. The pathologist will observe that the types of disease vary in different districts; that parasites which are important etiological factors in one place are less potent for evil in another; that different intestinal parasites affect different countries to an extent which appears inexplicable, but which admits of solution if the whole circumstances and environment are considered. The ill-assorted and unscientific findings of insurance agencies by a perusal of the *Colonial Medical Reports* could be corrected and brought into a form suitable to existing conditions; and not in accordance with the gossip of travellers and ship captains dating from a period of many decades ago, when hygiene, both at home and in the Tropics, was an unknown quantity.

By the courtesy of the Colonial Office authorities we are permitted to publish these selections, and as time goes on the form in which they are issued will no doubt admit of considerable improvement. Meantime we beg our readers to communicate with us in regard to the manner and form in which the "selections" are published, and to help us to perfect what is an attempt to place the medical literature emanating from the colonies of the Empire upon a basis worthy of the importance attaching thereto.

PLAGUE IN INDIA.

DURING the week ending December 31st, 1904, 22,645 persons died from plague in India. Compared with the corresponding periods in 1902 and 1903, when the deaths were 14,000 and 17,000 respectively, 1904 shows a marked increase in mortality from plague. For a number of years the Bombay Presidency showed the maximum mortality; in the winter of 1903-1904, the Punjab held the record; and now in 1904-1905, during what may be termed the plague epidemic season in India, it is in the United Provinces (North-west Provinces and Oudh) that the mortality is highest.

Experience of plague in India during the past nine years shows that the disease appears first as an outbreak which, after prevailing for a year or two with a gradually increasing mortality, rather suddenly develops into a severe epidemic, and then lingers in an endemic form with varying intensity for many years.

Bombay, the Punjab and the United Provinces have each in turn had their "grand attack," and if the rule is to hold good in other districts of India the future is not without anxiety in Madras, Mysore, Bengal, the Central Provinces, and wherever else plague has appeared. It must be confessed plague is a disease which, when allowed to get hold upon a community, is beyond the control of any remedial sanitary measures at present known to us. The disease has prevailed in India ever since 1896, has caused the deaths of several millions of people, and the last year of its prevalence is the worst on record.

Plague has defied the efforts of the Government of India to check its spread or to limit its virulence, and it would appear as though the disease must work out its own immunity. In another ten or fifteen years it is possible plague may disappear as an epidemic by self-immunisation, and may then linger on indefinitely in a less severe form for many decades. It is not a hopeful or comforting outlook, but it is one which, while lamenting, we see no reasonable chance of bettering.

It is useless to suggest that a special and separate organised body of sanitary officers should be appointed to deal with plague in India; for those who know official life in India know well that such an attempt would be looked at askance.

MARRIAGE LAWS AND INSANITY IN CHINA.

INSANITY is an affliction comparatively rarely met with in China. In this connection the marriage laws and some of the customs prevalent amongst the Chinese are well worthy of study. No Chinaman is allowed to marry into a family possessing the same surname as himself, so that consanguinity of parentage is impossible. In China the surname is placed first in the signature, so that a person of the name of Ng-Ting-Foo belongs to the Ng family, and it is forbidden for a man of that name to marry into any Ng family, however parentally distinct, and however impossible it may be to trace even a remote connection between the families, as all persons possessing the same surname are regarded as brothers, sisters, or cousins. Consanguinity in marriage is therefore rendered well-nigh an impossible contingency in China, and all the more certainly as the parents arrange the marriage, selecting the bride for the bridegroom, so that love-match transgressions are practically impossible.

In this matter the Chinese, as in many other phases of public health, set an example which might well be followed. In Europe and America it is too often the endeavour of parents "to keep the money in the family," and they favour marriages between cousins to accomplish their ends. The selection of wives for their sons by parents wisely, that is hygienically, conducted would tend towards improving the public health in many ways, for no wise parents wish to see their offspring united in an unhealthy marriage. In China the youthful age at which marriage is encouraged favours this *régime* in a manner which would be resented by men and women at the more mature years at which they marry in Europe; but that does not in any way justify the proceeding from a hygienic standpoint. There may be much against early marriages, but the virility of the Chinese does not appear to be lessened by it, and there is less danger of children being born with hereditary taints either from alcohol or syphilis than in countries where marriage is deferred until the man is between the ages of 30 and 40.

Intoxicating liquor is rarely consumed in China, and by young men practically never. Opium smoking has been shown in Java, and by Dr. Ellis in Singapore, where the population is Chinese and opium smoking is wide-spread, to have no etiological bearing upon insanity. General paralysis of the insane and other brain lesions were not found in a single case of 370 insane natives examined in Singapore, whilst there were eight such cases amongst fifty European insane. These facts accord with experience in other countries and give food for thought in several directions.

J. C.

LONDON SCHOOL OF TROPICAL MEDICINE.

Mr. W. S. Perrin has been appointed to the Chair of Protozoology, and Robert Thomson Leiper, M.B., B.Ch., Glasgow, has been appointed to the Chair of Helminthology at the London School of Tropical Medicine. Mr. Perrin was a scholar of Gonville and Caius College, Cambridge, and obtained a first class in both parts of the Natural Science Tripos. He holds the Shuttleworth Research Scholarship of his College.

Mr. Perrin devoted his energies to protozoological work in Cambridge, and with a view of extending his knowledge, he proceeded to Rovigno to study parasitic protozoa under Professor von Prowazek, assistant to Professor Schaudinn at the Marine Zoological Station near Trieste.

Dr. Leiper gave early manifestation of his interest in zoology, and particularly in parasitic helminthology, and for some time he has been wholly engaged in the pursuit of that study. At the meeting of the British Association in Belfast he contributed a paper on a new parasitic worm, found in *Echinocardium cordatum* (Penn.). The Zoological Society of London in their *Proceedings* for 1904 published a descriptive account by Dr. Leiper of *Avagina incola*, with a note on the classification of the *Proporidæ*. He also described a new sporozoon parasite from the skin of *Rossia macrosoma* at a meeting of the Medical Chirurgical Society in Glasgow in 1904. Recently he has been engaged in the examination of the helminthological material brought to this country by the Scottish National Antarctic Expedition. The Senate of the University of Glasgow in 1902 elected Dr. Leiper Research Scholar in the Embryological Department; he also held a Carnegie Medical Research Scholarship.

BANQUET ON BEHALF OF THE LONDON SCHOOL OF TROPICAL MEDICINE, ON MAY 10, 1905.

The Right Honourable Joseph Chamberlain, M.P., in the Chair.

The following letter is being circulated:—

Sunderland House,
Curzon Street,
London,
January 23, 1905.

Dear Sir,—I have accepted the Chairmanship of the Dinner Committee which is to arrange the banquet over which Mr. Chamberlain will preside at the Hotel Cecil, on May 10th, on behalf of the London School of Tropical Medicine. I write to ask you if you will be good enough to allow your name to appear as a steward, and, furthermore, to express the hope that you will use your kind interest with your friends and others to enable us to announce as large a sum as possible at the banquet.

The School owes its inception to Mr. Chamberlain and has received the active sympathy and support of the present Secretary of State for the Colonies. The success of this far-reaching attempt to ameliorate the condition of our fellow countrymen in the Tropics and to save from sickness and suffering, not only those who are carrying on the work of the Empire in dangerous climates, but also the native inhabitants, has far exceeded the anticipation of its founders. In recognition of what has been done, and of the wide field of work that remains to be covered, Mr. Chamberlain has consented to preside at the banquet in order to call public attention once again to the movement and, if possible, to place the School upon a sound financial basis.

The School, which was originally intended for twelve students, has expanded, until now it has accommodation for forty students. This number is at present working in the laboratories and there is every prospect of a further increase.

The Seamen's Hospital Society has kindly advanced the greater part of the funds expended on the building and equipping of the School, which is now indebted to that Charity to the extent of £6,000 or £8,000. It is partly to defray this debt that the banquet is to be held, but also, and in addition, to raise a very much larger capital sum so as to place the finances of this valuable Institution upon a permanent footing and adequately to endow the double work of teaching and research.

When it is borne in mind that there are three sessions in each calendar year, it will be readily appreciated that the School, training as it does, with its present limited resources, over 100 students annually, cannot fail in the course of a very few years to effect a marked and lasting improvement in the treatment of tropical diseases and to widen the knowledge of their causes and remedies.

The enclosed papers[1] will give you further particulars, and it will afford me much pleasure to send you any information you may desire in reference to the School and Hospitals and in regard to the arrangements which are being made for the banquet.

I trust that I may count upon your assistance in this important matter.

Believe me,
Yours sincerely,
Marlborough,
Chairman of Dinner Committee.

Contributions may be sent to the bankers of the Seamen's Hospital Society, Messrs. Williams Deacon's Bank, Ltd., 20, Birchin Lane, London, E.C.

The *Indian Medical Gazette*, by its January number, inaugurates the fortieth year of its existence. We wish this important and excellent periodical continued success.

[1] The papers referred to give an account of the work of the School since its opening five years ago.

British Medical Association.

MEETING AT LEICESTER.

July 24 to 28, 1905.

PROGRAMME.

President: William Collier, M.D., F.R.C.P.Lond., Physician, Radcliffe Infirmary, Oxford, and Litchfield Lecturer in Medicine, University of Oxford.

President-elect: George C. Franklin, F.R.C.S., Honorary Surgeon, Leicester Infirmary.

Chairman of Representative Meetings: Sir Victor Horsley, F.R.S.

Chairman of Council: Andrew Clark, D.Sc., F.R.C.S.

Treasurer: Edward Markham Skerritt, M.D., F.R.C.P.

An Address in Medicine will be delivered by Henry Maudsley, LL.D., M.D., F.R.C.P.

An Address in Surgery will be delivered by Charles John Bond, F.R.C.S.

A popular lecture will be delivered by Professor William Stirling, D.Sc., M.D., F.R.S.E.

SECTIONS.

The annual meeting at Leicester will comprise twelve Sections as shown in the subjoined list. The Sections will meet on Wednesday, Thursday, and Friday, July 26th, 27th and 28th, from 10 a.m. to 1 p.m.

The President, Vice-Presidents, and Secretaries of each Section constitute a Committee of Reference for that Section.

Papers read are the property of the British Medical Association, and cannot be published elsewhere than in the "British Medical Journal" without special permission.

No paper must exceed fifteen minutes in reading, and no subsequent speech ten minutes.

MEDICINE.

President: Frank M. Pope, M.D., F.R.C.P., Leicester. *Vice-Presidents:* Reginald Pratt, M.D., M.R.C.P., Leicester; Robert William Philip, M.D., F.R.C.P.Edin., Edinburgh; William Bramwell Ransom, M.D., F.R.C.P., Nottingham. *Honorary Secretaries:* William Mitchell Stevens, M.D., M.R.C.P., 21, St. Andrew's Crescent, Cardiff; Frank Harwood Jacob, M.D., 28, Regent Street, Nottingham; Bertrand Dawson, M.D., 32, Wimpole Street, Cavendish Square, W.

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INDUSTRIAL HYGIENE AND DISEASES OF OCCUPATION.

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LARYNGOLOGY, OTOLOGY AND RHINOLOGY.

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President: Surgeon-Lieutenant-Colonel Henry Walter Kiallmark, M.R.C.S., London. *Vice-Presidents:* Surgeon-Lieutenant-Colonel Robert Bradshaw Smith, V.D., L.R.C.P., Hinckley; Lieutenant-Colonel Edmond Monkhouse Wilson, C.B., C.M.G., D.S.O., S. Farnboro'; Fleet-Surgeon Alexander J. J. Johnston, R.N., Haslar. *Honorary Secretaries:* Surgeon-Captain Wm. Pemberton Peake, M.R.C.S., 21, Oxford Street, Leicester; Captain Edwin Charles Montgomery-Smith, R.A.M.C. (Vol.), 36, Abbey Road, St. John's Wood, N.W.

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The Honorary Local Secretary is—
Astley V. Clarke, M.D.
37, *London Road, Leicester.*

PLAGUE IN INDIA, JULY 1 TO DECEMBER 31, 1904.

In the Journal of September 1st, 1904, the detailed statement of the deaths from plague in India from January 1st to June 31st, 1904, was published. The deaths during the six months numbered 725,631.

The weekly death-rate from plague in India during the six months ending December 31st, 1904, were as follows:—

July	1—2	700
,,	9	1,910
,,	16	1,995
,,	23	2,608
,,	30	3,258
August	6	4,794
,,	13	5,849
,,	20	6,198
,,	27	8,304
September	3	9,914
,,	10	11,191
,,	17	10,671
,,	24	11,866
October	1	13,633
,,	8	16,491
,,	15	16,111
,,	22	13,871
,,	29	15,994
November	5	14,397
,,	12	15,197
,,	19	14,115
,,	26	14,528
December	3	17,728
,,	10	17,439
,,	17	18,284
,,	24	19,465
,,	31	22,645
Total for six months ending Dec. 31st		309,156
Total for six months ending June 30th		725,631
Total deaths from plague during 1904		1,034,787

Abstract.

ON THE EPIDEMIOLOGY OF PLAGUE.

By E. H. Hankin, M.A.

Chemical Examiner and Bacteriologist to the United Provinces and to the Central Provinces, India.

In areas in which plague is present, or has recently been present, in India, as an epidemic, no definite relation has been observed between intensity of plague (apart from its persistence) and badness of sanitary condition of dwellings. On the other hand, in areas in which plague is present endemically, so far as evidence goes, very unsatisfactory sanitary conditions exist. Such areas are generally situated in mountainous countries (Garhwal, Yunnan, Beni-Cheir, Transbaikalia). The inhabitants of such places, owing to the difficulty of obtaining water for domestic purposes, are apt to be filthy both in their houses and persons. In Garhwal, Yunnan and Beni-Cheir domesticated animals are stabled in the houses, the paucity of level area making separate provision for cattle a matter of difficulty. Stable refuse consequently is liable to accumulate in the lower floors of the houses, producing conditions favourable to the presence of swarms of fleas.

Persistence of Plague in Endemic Areas.

A study of the plague in the Indian endemic area of Garhwal indicates that it does not persist there owing to a constant succession of cases of the disease. On the contrary, the disease remains apparently extinct for years, and then suddenly breaks out in fully virulent form. The observations of Planck leave little room for doubt that during the intervals between successive outbreaks the microbe does not continue to exist owing to a succession of passages either through human beings or through rats. Judging from present evidence, it would appear that it exists in a latent state so far as these particular living beings are concerned.

Fakirs and Plague.

There seems every reason to associate the wanderings of the fakirs from endemic centres of plague, as in Garhwal and Kumaon, with the spread of plague. The fakirs themselves need not be infected by plague, for it would appear that plague is often caused by persons not themselves infected by the disease.

The outbreak of plague which occurred in Bombay in 1896 was probably derived from infection from Garhwal, and not from Hong Kong as at one time surmised.

Peculiarities of Plague in Bombay.

Plague in Bombay is characterised by its (1) persistency; (2) intensity; (3) by its maximum virulence occurring in villages rather than in towns; (4) by the fact that plague, although it spreads with facility from a town or village to a neighbouring village, does not appear often to be carried to great distances in epidemic form; (5) in India plague shows no tendency to proceed along trade routes as such.

Plague Infection not a Simple Process.

The spread of plague is not a simple process, for, as pointed out by Simond ("*La propagation de la*

Peste," *Annales de l'Institut Pasteur*, October 1898, p. 625), the infection brought into a village frequently does not manifest its activity until a period of weeks, or even months, after the initial cases have occurred. This fact would appear to indicate that, as a rule, plague spreads not by simple contagion from patient to patient, but by some deep-seated, and perhaps complicated, method.

"Pestis Puerorum."

Hankin draws special attention to the fact that some outbreaks of plague have, according to old and authentic records, chiefly attacked children; so much so, that the disease has been termed "Pestis Puerorum."

Rats and Plague.

The part played by rats in the spread of plague appears to be indefinite, and may be quite unrecognisable. The disease has been known to spread without rats being attacked; men and rats have at times been attacked simultaneously; and again, rats may die of plague without men in the locality contracting plague at all. Hankin regards plague as belonging possibly to the group of miasmatico-contagious diseases, of which cholera and enteric are types. Although the dejecta of human beings frequently contains plague bacilli, there is no direct proof that the dejecta of human beings are an important source of infection. The migration of rats would in some instances explain the spread of plague, but in other cases it would seem that the two are not connected. One fact is clear, however, that there is no quantitative relation between rat and human mortality, for in localities in which dead rats were in great numbers, plague does attack human beings more pronouncedly than in districts where but few dead rats obtained.

Plague would seem to attach itself to a locality, and this cannot be accounted for by contagion arising from the dejecta of either men or rats.

The part played by rat-fleas is fully gone into by Hankin. He is of opinion that biting insects do not directly innoculate man, but by a series of experiments he has arrived at the conclusion that in the rat the bacilli of plague go through a latent period, during which time reproduction is manifest, as evidence of the plague bacillus within the body of fleas. Hankin writes as follows:—

"As evidence that the plague microbe develops within the body of the flea, I can only quote the following observation of my own, made during the above-mentioned plague outbreak in Agra. In April, 1901, a rat was brought to me that had been found dead in the grain dealers' quarter in Agra, shortly after the first human case of the disease had occurred. No trace of the plague microbe could be found, either by microscopical examination or by culture in any of the tissues of the rat. On the rat, however, I found a living flea. This I caught and placed in a tube of sterile bouillon. The tube was violently shaken. The flea was then taken out and placed in a second tube of bouillon and similarly treated. The process was repeated several times, with the object of removing, as far as possible, saprophytic bacteria that might be present on the surface of the flea. After the above treatment the flea was dissected, with strict aseptic precautions, under a dissecting microscope. The stomach was taken out and cut in two pieces. One half was placed on agar-agar, and from it a pure culture of plague was obtained (as shown by involution forms on salt agar, &c). The other half of the stomach was subjected to microscopic examination. The only microbes visible were bacilli with rounded ends, identical in appearance with those of plague. These were arranged in clusters of about a dozen individuals each, and appeared to be embedded in the tissues of the stomach wall. No bacilli were observed in the liquid contents of the stomach. The arrangement of the bacilli in clusters obviously suggests that they were engaged in reproduction *in situ*.—*Journal of Hygiene*, January, 1905.

Books and Pamphlets Received and Noted.

Protective Inoculation against Asiatic Cholera. By Richard P. Strong, M.D. Manila, 1904.

The epidemic of Asiatic cholera which prevailed in the Philippines during 1902-3 was closely investigated as to its epidemiology, pathology and prophylaxis. In the city of Manila food was considered the more probable medium of infection, whilst in other parts of the Philippines the disease was certainly conveyed and spread by the water supply. Dr. Strong reviews the methods of protective inoculation previously employed. They are:—

(1) Ferran, in 1885, during an epidemic of cholera in Spain, first introduced the vaccination of human beings against the disease. The results were unfavourable.

(2) Haffkine's method of vaccination was as follows: An attenuated virus was first prepared by growing the cholera organism in flasks of bouillon at 39° C. while allowing a constant current of air to pass over the surface of the media. After this attenuation the germs were grown upon agar and carried from tube to tube. A virulent virus was prepared by inoculating a guinea-pig intraperitonally with cholera spirilla and then inoculating a second pig with the peritoneal exudate of the first, and so on through numerous animals until a very virulent culture was obtained. This was known as the fixed virus. The vaccination of human beings was performed in two stages. In the first 0·1 to 0·05 of a twenty-four hours' agar tube of the attenuated culture suspended in bouillon was injected subcutaneously. In the second, performed from three to eight days after the first, the same amount of the virulent culture or "fixed virus" was inoculated.

(3) Tamancheff showed that the addition of carbolic acid in the proportion of 0·5 per cent. killed the organisms without, however, interfering with their immunising properties.

(4) Klemperer, in 1892, and afterwards Kolle, determined accurately that specific protective substances enter into the serum of human beings inoculated subcutaneously with cholera organisms. Kolle maintained that a single injection of the living cholera vibrios gave as good an immunity as when the inoculation was repeated, and further, that the use of dead

SELECTIONS

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No. 1.

BASUTOLAND.

Medical Report for the Year ending December 31st, 1903.

By EDWARD CHARLES LONG, M.R.C.S., L.R.C.P.

Principal Medical Officer.

Population.

No estimate of population which would be of any value is possible at present. The coming census should however provide some interesting information for next year's report. In 1899 the population was estimated at 270,000, including 700 Europeans.

General Health of the District.

The year under review may be said to have been an average healthy one. There have been but few epidemics, and none of importance, with the exception of *Scurvy* and *Pneumonia*, to which reference will be made later.

Whooping Cough

Was prevalent during the winter, and rather more cases of bronchial affections were noticed, but they were mostly of a mild nature.

Enteric Fever.

There were fewer cases of *Enteric Fever* than usual. Some districts were practically free of this complaint throughout the year.

Intestinal Disorders.

There was the usual amount of *Infantile Diarrhœa* in the summer months, mostly traceable to improper feeding.

Most of the cases of *Dysentery* which were admitted to the hospital occurred in labourers returning from work in neighbouring territories.

Leprosy.

The increase in the number of lepers recorded is due to the investigation which was undertaken during the year, and concerning which a full report has been made to the Colonial Office.

Syphilis.

Except in the *Tertiary forms*, *Syphilis* shows a slight decrease for the first time, a most satisfactory feature, as the disease is one of the greatest scourges in the country. The natives seem to appreciate more aud more the value of treatment in this disease, and the knowledge that it can be cured has spread to the remoter districts. People frequently come or send many days' journey to ask for medicine. I have in previous reports referred to the appalling tertiary cases which are so common. The people have lately coined a word "moto" to designate one of the commonest lesions, viz., phagedænic ulceration of the fauces and palate, which they look upon as a distinct disease, and they have likened its ravages to that of moth in blankets, "moto" being a corruption of the Dutch word "mot."

New Growths.

There has been an increased number of *Benign Growths* treated, and since the date of the circular issued by the Cancer Research Committee a considerable number of specimens has been despatched to the Director of the Committee.

The few cases of *Malignant Disease* noted were not of much value scientifically, owing to the rooted aversion to *post-mortem* examinations exhibited by friends of deceased patients. Consequently scarcely any specimens of this kind are ever available.

Diseases of the Eye.

Ophthalmia of a mild type was as usual noted throughout the year, and was not affected by the seasons.

The considerable increase in the number of *Cataract* cases treated is due to the fact that the people are gradually learning that the disease is capable of relief. Forty cases were successfully operated on; they were all of the senile variety.

The prevalence of *Glaucoma* is noteworthy. Unfortunately the bulk of the cases only come when the glaucoma is absolute and beyond relief.

A good many *Cases of Blindness*, due to the destruction of the cornea from small-pox, have been seen. These patients have often heard of friends who have been successfully operated on for cataract, and it is most distressing to have to send them away unrelieved.

In some cases in which the cornea is not hopelessly destroyed Darier's method of subconjunctival injections is now being tried at Maseru Hospital, and Dr. Jones hopes in my next report to be able to embody the results of the trial.

Generative Organs.

An increasing number of *Diseases of the Female Generative Organs* is noted. Subinvolution from improper care after parturition is the most common.

One case of malformation deserves notice on account

of its rarity, viz., *Congenital Absence of the Vagina.* patient was a girl of about sixteen years of age, and attention was first called to her condition by the absence of menstruation. The external genitals were small, but otherwise normal. The vagina was entirely absent, and represented by a fibrous cord. The uterus and ovaries were present, but infantile in type. An exploratory operation was performed, but the case was found to be beyond the scope of surgical interference. In connection with this case I may state that about two years ago I operated successfully on a case of partially occluded vagina in a young native woman.

Digestive System.

Functional Disorders of the Digestive System were, as usual, very numerous, and are mainly due to injudicious diet.

Meteorology.

The meteorological conditions in 1903 were very unfavourable to the public health. There was a failure of the late summer and autumn rains, with very early frosts, which destroyed most of the scanty crops which had survived the dry weather. The winter was cold and dry, and extraordinarily windy and dusty. There was a prolonged drought in the spring which destroyed the wheat crop, and deprived the people of the food they are accustomed to depend on till the mealies ripen, besides preventing the growth of the wild spinach and other herbaceous plants which are used as an article of diet in the spring and early summer months. The drought persisted through the first two summer months, although some rain fell in November and December. Windy weather with dust may be said to have prevailed during six months of the year.

The total rainfall for the year was 12 inches below the average. The effect of such inclement weather on the health of the people was twofold. Firstly, it entailed a general scarcity of the staple food of the country, with a consequent general lowering of vitality. The scarcity had to be made up by the importation of grain, which in the main was of very inferior quality, and in some cases positively harmful. The absence of the usual supply of fresh grain (wheat) and green vegetable food in the late spring and early summer months accentuated this. Hence the prevalence of scurvy and digestive troubles. Secondly, the cold, windy, and dusty weather of the winter and spring months was indirectly responsible for the prevalence of pneumonia and bronchial troubles.

Epidemic of Pneumonia.

The number of cases of pneumonia recorded does not afford a correct estimate of the extent of the epidemic. From information supplied to Dr. Long, he judges there was a considerable number of deaths from this complaint in July and August, the months when the disease was most prevalent in other parts of South Africa. Certainly the type of disease in the cases which came under his immediate notice was much more severe than have been accustomed to be observed here in former years, and the death rate was proportionately high.

Prevalence of Scurvy.

Mild cases of this disease have from time to time been observed in Basutoland, but during 1903 a considerable percentage of the people have suffered, and there have been many deaths. A large number of the cases occurred in labourers returning from work in neighbouring territories. Many of these arrived in Basutoland in a pitiable condition. So common has scurvy been during 1903 that the Basuto have coined a word to describe it. They call it "mochecha fatsi," which means to propel oneself on the haunches by the aid of the hands, this being the only way in which advanced cases with painful brawny swellings of the calves are able to move about.

During the month of December, when the epidemic was at its worst, Dr. Long examined a large number of out-patients for signs of scurvy, and discovered indications of the disease in a considerable percentage of those who sought relief for other diseases. An examination of a batch of labourers destined for the Koffyfontein mine led to the rejection of 25 per cent. on account of incipient scurvy.

So far as observed here, the symptoms of scurvy do not differ from the classical symptoms described in text-books. Swollen, spongy gums, which bleed readily, offensive breath with dry, harsh skin and great weakness and prostration, are early symptoms. Great pain in the lower extremities is complained of, and in advanced cases there were always brawny, painful swellings of the calf muscles. Subcutaneous hæmorrhages were rarely observed. Adults, especially males, seemed most liable to the disease. Few cases were observed in children. The mortality was highest in young male adults, especially those who had been working on the railways and mines.

The cause of the epidemic has already been referred to. Certainly in Basutoland Dr. Long considers the bad quatity of the imported grain to be largely responsible.

The treatment of cases was beset with difficulties, owing to the impossibility of obtaining anti-scorbutic articles of diet. Lime-juice we found nearly useless when the disease was well established. It was valuable, however, as a prophylactic in the gaols, which were, with the exception of two cases, quite free of the disease.

The most rapid cure was obtained by the addition of oranges to the diet. Unfortunately the available supply only permitted of this remedy being used in a few cases. As regards drugs, citric acid, with large doses of cinchona, seem to afford most relief.

Sanitary Conditions.

The sanitary condition of the territory calls for no comment. The water supply at most stations is still insufficient. At Mafeteng and Leribe the deficiency was most acutely felt, and was much intensified by the phenomenally dry year. Schemes for obviating this in future have, I understand, been already drawn up and authorised.

Vaccinations.

Sixty thousand five hundred and fifty-five Vaccinations were performed during the year, all with calf lymph supplied by the Cape Bacteriological Institute.

The following return of cases treated at the Hospitals is attached to this report:—

RETURN OF DISEASES AND DEATHS IN 1903 AT THE BASUTOLAND HOSPITALS.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	—	—	—
Anæmia	—	—	39
Beri-beri	—	—	—
Bilharziasis	—	—	—
Black-water Fever	—	—	—
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	4	—	240
Delirium Tremens	—	—	—
Dengue	—	—	—
Diabetes Mellitus	—	—	3
Diabetes Insipidus	—	—	—
Diphtheria	—	—	1
Dysentery	7	3	28
Enteric Fever	4	—	22
Erysipelas	—	—	5
Febricula	2	—	144
Filariasis	—	—	—
Gonorrhœa	—	—	326
Gout	—	—	24
Hydrophobia	—	—	—
Influenza	—	—	101
Kala-Azar	—	—	—
Leprosy—			
(*a*) Nodular	—	—	2
(*b*) Anæsthetic	—	—	3
(*c*) Mixed	—	—	17
Malarial Fever—			
(*a*) Intermittent	—	—	—
Quotidian	—	—	—
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	—	—	—
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	2
Mumps	—	—	175
New Growths—			
Non-malignant	—	—	199
Malignant	—	—	9
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	—	—	2
Rachites	—	—	6
Rheumatic Fever	—	—	17
Rheumatism	2	—	767
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	16	—	222
Septicæmia	—	—	—
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	—	—	—
Syphilis—			
(*a*) Primary	—	—	15
(*b*) Secondary	—	—	234
(*c*) Tertiary	12	2	1067
(*d*) Congenital	—	—	366
Tetanus	—	—	—
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	5	—	59
(*b*) Tuberculosis of Glands	12	—	57
(*c*) Lupus	—	—	3
(*d*) Tabes Mesenterica	1	—	5
(*e*) Tuberculous Disease of Bones	—	—	3
Other Tubercular Diseases	—	—	—

GENERAL DISEASES—*continued.*	Admissions.	Deaths.	Total Cases Treated.
Varicella	—	—	18
Whooping Cough	—	—	579
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

Diseases of the—			
Cellular Tissue	40	1	300
Circulatory System	3	1	72
(*a*) Valvular Disease of Heart	—	—	—
(*b*) Other Diseases	—	—	44
Digestive System—	—	—	4304
(*a*) Diarrhœa	—	—	885
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	1
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	—	—	7
(*g*) Cirrhosis of Liver	—	—	—
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	—	—	—
Ear	—	—	264
Eye	72	—	722
Generative System—			
Male Organs	27	—	113
Female Organs	21	—	531
Lymphatic System	—	—	141
Nervous System	10	—	320
Nose	—	—	77
Organs of Locomotion	11	—	90
Respiratory System	18	6	2285
Skin—	—	—	—
(*a*) Scabies	—	—	39
(*b*) Ringworm	—	—	55
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	5
(*e*) Eczema	1	—	403
(*f*) Other Diseases	1	—	442
Urinary System	—	—	88
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	31	—	360
Parasites—			
Ascaris lumbricoides	—	—	—
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	142
Poisons—			
Snake-bites	—	—	1
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	1
Nature Unknown	—	—	—
Other Poisons	—	—	—
Surgical Operations—			
Amputations, Major	—	—	132
,, Minor	—	—	863
Other Operations	—	—	—
Eye	—	—	—
(*a*) Cataract	—	—	80
(*b*) Iridectomy	—	—	20
(*c*) Other Eye Operations	—	—	—

No. 2.

ST. KITTS-NEVIS AND ANGUILLA.

Medical Report on the Sanitary Condition of the Presidency of St. Kitts-Nevis and the Island of Anguilla, with Statistical Tables for the Year ending December 31st., 1903,

By W. H. FRETZ, L.R.C.P., L.R.C.S.Edin.

Population.

The population during the year 1903 was for St. Kitts, 30,314; Nevis, 13,422; Anguilla, 4,073; and that the death-rate was for St. Kitts, 30·77 per mille, against 26·17 per mille in the previous year; Nevis, 23·61 per mille against 21·87 per mille in the previous year; Anguilla, 23·07 per mille, against 18·88 per mille in the previous year; while the birth-rate was for St. Kitts, 36·55 per mille, against 35·70 in the previous year; Nevis, 40·38 per mille, against 44·93 in the previous year; Anguilla, 40·90 per mille, against 28·43 in the previous year.

Birth-rate.

The birth-rate is interesting, as will be seen from the following tabular statement:—

—	Legitimate Births	Legitimate Birth-rate per 1,000	Illegitimate Births	Illegitimate Birth-rate per 1,000
St. Kitts ..	378	12·40	711	23·40
Nevis ..	228	17	312	23·30
Anguilla ..	105	26·20	91	22·70

The Public Health

Of the inhabitants was good. There was an absence of any widespread outbreak of any serious epidemic disease.

Malaria.

Malarial Fever has hitherto not been endemic in this Presidency, but owing to the frequent emigration and immigration now going on to and from islands where cases always occur, the tendency to endemicity is beginning to prevail, and at certain seasons of the year may even prove to be epidemic. The most common type of fever in this island is the remittent, and is found among all classes.

Chicken-pox.

This mild infectious disease has been reported from several parts of the Presidency, though it never became epidemic.

Intestinal Disorders.

Dysentery seems to have been fairly distributed throughout the Presidency.

Diarrhœa prevailed generally, and though not in an epidemic form, contributed largely to the death-rate, chiefly of infants.

Leprosy.

The total number of cases in the Lazaretto on December 21st, 1903, was sixty-two, against seventy-one in the previous year; two new cases were received, against eight in the previous year. The question as to the necessity of the segregation of lepers has recently been contested, but if it be conceded that leprosy is caused by a germ, then the leper must be regarded as a source of danger, and the most effectual way of suppressing the disease seems to be by the thorough isolation of existing lepers; wherever the disease has been treated by such it has slowly but surely died, but where it has not, the disease has continued and still prevails. It is impossible to state if this disease is on the increase in this island; the compulsory notification of leprosy may prove useful in this connection. The benefits gained by the Presidency by having in its midst such an institution as the Lazaretto have been abundantly proved, providing, as it does, for those who have no homes and no means of protecting themselves.

Yaws.

From the reports of the District Medical Officers, this disease seems to be on the increase in the Presidency. As sanitary methods become more generally known through recent legislative measures, we trust it may show a marked decrease. A valuable paper on this subject by Dr. Rat, of Anguilla, is appended.

Tuberculosis.

A diseased condition of a specific and infective nature, which occurs in different forms, is very prevalent among our coloured population, who seem very susceptible to its ravages; 158 deaths are attributed to tubercle during the year under review.

Cancer.

Eighteen deaths are placed under this heading. Our native population are not very prone to this dreadful malady.

Sanitary Condition.

The general sanitary condition of the Presidency remains in much the same condition as last year; the same method of disposal of fæcal matter exists, but the subject has been considered by the Town Board of Basseterre, and a more sanitary method to take the place of the present one is under consideration. The town of Basseterre seems to be extending, and urgent methods should be taken to keep it in as sanitary a condition as possible.

Port sanitation is a chief consideration, and a first line of defence to the town against disease is the sanitation of the port.

The dust is objectionable and detrimental to health, and the streets should, if possible, be watered more frequently to allay this nuisance. The scavenging is good. The water supply is of good quality, but during a long drought is a source of some anxiety.

The houses of the poor need much improvement, and attempts should, if possible, be made to make these more healthy and sanitary.

The Medical Officer of District 5 (Dr. Foreman) reports as follows: "In my district the first three-quarters of the year were pretty healthy, but the last one was very unhealthy, diseases of the digestive and respiratory organs being prevalent. I am sorry to say that yaws is on the increase in this part of the island."

The Medical Officer of District 6 (Dr. Bell) reports as follows: "The health of District 6 was not satisfactory during last year. Malarial fevers, chiefly of the remittent form, prevailed in the early and late months, and diarrhœa and dysentery in children and adults during the warm season."

The Medical Officer of District 7 (Dr. Cooke) reports as follows:—

"(1) The past year has not been remarkable in this district for the occurrence of serious epidemic disease, nor was it possible to note any particular seasonal prevalence, with perhaps the exception of the usual increase of intestinal disorders in children during the hot months.

"(2) There were a few cases of varicella about the middle of the year, but the disease did not become epidemic; and the sporadic cases, which included adults as well as children, did not present much constitutional disturbance, nor require much in the way of treatment.

"(3) The education of the people in sanitary matters makes very slow progress, and the results of dirt and poverty are very manifest, even to a casual observer. In this connection, I may mention, there has been a great prevalence of tinea taral amongst the children of the district. Yaws also is widely spread throughout the island, and seems to be on the increase.

"In attempting to combat these diseases the greatest difficulty is experienced in getting the people to continue treatment, in conjunction with cleanliness, long enough to be effectual.

"(4) As the number of emergencies this year has been few, the majority of the cases treated at the Nevis Emergency Ward have been badly ulcerated legs in young adults, a class of case of very frequent occurrence in the district, and mainly the result of neglected yaws, or poverty and yaws combined, so that the beds have been occupied one way or another throughout the year."

Health of Anguilla.

The Medical Officer of Anguilla (Dr. Rat) reports as follows: "There is nothing special to report with regard to the health of Anguilla during the first two quarters of the past year.

"The third and fourth quarters were marked by a very high mortality, which was indirectly caused by the want of food from which the poorer classes suffered as the result of a long-continued drought.

"Malarial fever prevailed very extensively during the last quarter and still continues, chiefly in the eastern portion of the island, where the excavations caused in the limestone rocks by the rain form reservoirs where the mosquitos breed freely and undisturbedly. The fever did not present any of the several symptoms which characterised the previous epidemic. It showed rather a tendency to pass into the form of the pure intermittent after a few days of continued pyrexia, and to become chronic."

Vaccinations.

During the year there were 1,657 cases of successful vaccinations, against 1,776 cases for the previous year. The children of this Presidency are well protected against small-pox, but the same cannot be said of its adult population. The Government in their wisdom have offered them re-vaccination, but they are not willing to avail themselves of the boon. Considering that small-pox in its natural state is one of the most loathsome, disfiguring, and fatal diseases, the only protection of any avail being vaccination, it will be a wise provision that re-vaccination be made compulsory by law, and that it be performed during the ages of 10 and 13 years.

Health Ordinances.

Two legislative enactments which came into force during the year are of medical interest, and must prove beneficial to the Presidency—No. 12 of 1902, and No. 13 of 1902. The former, the *Health Ordinance*, establishing local boards of health in the several country districts, and giving representative local residents control of their sanitary measures, must serve a useful purpose; the latter, the *Infectious Diseases Ordinance*, provides for the notification of infectious and notifiable dieeases, and the proper control of such. The coming into being of the Basseterre Town Board marks a new era in the management of the sanitary measures of the chief town, and much may be expected from it in progressive sanitation. The question of quarantine has been brought forcibly to notice of late; the want of uniformity in its rules and regulations has been apparent; the necessity for careful consideration of the whole subject under the light of modern views and theories has been abundantly proved. As the question is shortly to be discussed at a conference, it will prove no useful purpose to enter into the subject at this stage.

Medical Staff.

The Medical Staff of the Presidency is now complete with seven District Medical Officers, and Medical Superintendent of the Cunningham Hospital. In this connection I cannot conclude this report without reference to the retirement of Dr. W. J. Branch from the public service of the Presidency. Entering as a District Medical Officer in the year 1863, he devoted forty years of his life to assiduous and earnest medical work, gaining for himself universal respect. To the Cunningham Hospital he has devoted the best energies of his life; this institution owes more to him than any other man. To his junior colleagues and consultants he gave utter loyalty, with a strong professional instinct. He is still amongst us, ever ready to give of his fund of varied experience and knowledge, though retired from active duties.

RETURN OF DISEASES AND DEATHS IN 1903 AT ST. KITTS-NEVIS AND THE ISLAND OF ANGUILLA.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	6	—	6
Anæmia	5	1	7
Beri-beri	—	—	—
Bilharziasis	—	—	—
Black-water Fever	—	—	—
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	25	7	39
Delirium Tremens	—	—	—
Dengue	—	—	—
Diabetes Mellitus	—	—	—
Diabetes Insipidus	—	—	—
Diphtheria	—	—	—
Dysentery	32	6	32
Enteric Fever	—	—	—
Erysipelas	3	1	3
Febricula	4	—	4
Filariasis	21	2	27
Gonorrhœa	23	—	24
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	4	2	5
Kala-Azar	—	—	—
Leprosy—			
(*a*) Nodular	1	3	21
(*b*) Anæsthetic	1	8	52
(*c*) Mixed	—	—	—
Malarial Fever—			
(*a*) Intermittent	1	—	3
Quotidian	9	—	9
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	59	5	61
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	—
Mumps	—	—	—
New Growths:			
Non-maliginant	13	—	14
Malignant	11	3	19
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	1	1	1
Rachitis	—	—	—
Rheumatic Fever	—	—	—
Rheumatism	—	14	17
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	—	—	—
Septicæmia	—	—	—
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	—	—	—
Syphilis—			
(*a*) Primary	21	—	22
(*b*) Secondary	124	8	136
(*c*) Tertiary	—	—	—
(*d*) Congenital	3	—	4
Tetanus	2	1	3
Trypanosoma Fever	—	—	—
Tubercle—			
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tubercular Diseases of Bones	—	—	—
Other Tubercular Diseases	55	29	65
GENERAL DISEASES—*continued.*			
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	9	—	10
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	54	—	57
Circulatory System—			
(*a*) Valvular Disease of Heart	16	4	17
(*b*) Other Diseases	9	3	9
Digestive System—			
(*a*) Diarrhœa	24	3	26
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	—
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	—	—	—
(*g*) Cirrhosis of Liver	—	—	—
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	168	4	179
Ear	3	—	3
Eye	56	—	60
Generative System—			
Male Organs	33	—	33
Female Organs	62	2	67
Lymphatic System	—	—	—
Nervous System	86	17	114
Nose	—	—	—
Organs of Locomotion	19	2	28
Respiratory System	23	4	26
Skin—			
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	—	—	—
(*f*) Other Diseases	126	12	159
Urinary System	47	14	52
Injuries, General, Local—			
(*a*) Siriasis (Heat-stroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	78	4	86
Parasites—			
Ascaris lumbricoides	1	—	1
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or ankylostoma duodenale	8	1	8
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature unknown	—	—	—
Other Poisons	1	—	1
Surgical Operations—			
Amputations, Major	18	—	19
„ Minor	99	—	105
Other Operations	—	—	—
Eye	12	—	12
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

"YAWS," BY DR. J. NUMA RAT.

Its introduction into Anguilla in 1903 (Anguilla is an island which lies sixty miles north-east of St. Kitts, British West Indies).

Yaws had not appeared in Anguilla within the memory of any of its inhabitants until June 1902, when a Negro, aged 8, an Anguillian, returned here from a visit to St. Kitts, with a fungating ulcer on one of her ankles, which proved to be the primary lesion of an attack of frambœsia.

There were at the time seven members (including the parents) of the family to which the girl belonged, the other children being two girls aged 14 and 5, a boy of 12 and an infant a few months old. They lived in a one-roomed thatched, unfloored hut, standing fifty yards away from the nearest dwelling.

In December, 1902, the eldest girl was suffering from a "scratch" on the upper part of her leg, which had suppurated, and she applied to it some of the ointment with which her infected sister was dressing the sore on her ankle. After a few days a fungating ulcer appeared on the site of the "scratch."

In January, 1903, the boy, aged 12, became infected with the disease through a wound on the foot, which shortly after began to fungate.

In June, 1903, the girl, aged 5, was infected through a fissure between two of her toes, which gradually spread into a fungating ulcer.

As there were no cases of yaws in the island when the girl returned here from St. Kitts, the nature of her disease was unsuspected, and the parents continued to treat the sore for several weeks as an ordinary ulcer. Nor do they seem to have attached any importance to the squamæ and papules which appeared on the patient between June and December, 1903.

Nor even when the eldest daughter was infected was the disease recognised.

It was not until January, 1903, when the schoolmaster brought for my inspection the boy of 12, with a frambœsial granuloma on the scrotum, that it was discovered that yaws had been introduced into the island.

The disease followed the usual course in the four cases. There was first the characteristic change in the lesion at the site of infection, and then, after a few weeks, a general eruption consisting of squamæ and papules, of which only a very few developed into granulomata.

The treatment of all the cases consisted of perchloride of mercy in small, and perchloride of iron in moderate doses during six months. By June, 1903, the two elder girls showed no symptoms of the disease. The affection proved more rebellious to treatment in the boy, in whose case, after the disappearance of the general eruption in July, 1903, hard papules developed on the knees and fronts of the legs, and on the elbows and backs of the arms. These disappeared, as usual, very gradually, and even up to the present a few of them are yet to be seen.

The boy was also the only one in whom granulomata appeared on the soles of the feet. These persisted six months after the general eruption had disappeared.

The disease in the case of the youngest girl, aged 5, was of a much milder form, the cutaneous symptoms consisting only of squamæ and papules and a solitary granuloma on the back of the hip. On account presumably of the mildness of her attack, the mercury was not persevered with as in the other cases, and she still exhibits squamæ and papules, but no granulomata.

In addition to the mercury and iron internally, sulphate of copper was applied to the gramulomata on the soles of the boy's feet, and all the patients were washed with water and a soap containing perchloride of mercury. The application of this soap was considered by the mother of the children as very effective in getting rid of obstinate squamæ and papules, and it certainly seemed to be useful, both for that purpose and for preventing the appearance of any further eruption.

I have already pointed out in a previous paper the necessity of determining whether yaws is a purely constitutional disease, or whether, like tuberculosis, it may be either constitutional or local, or both. Different views have been held as to its nosology, and the present one is that it is a constitutional disease. It is, however, possible that its germs may affect the skin without invading the system generally, or, which appears to me probable, that while it may be a general affection resulting from the introduction of the virus through some cutaneous lesion, the microbes may subsequently find their way into the frambœsial eruption, thus aggravating it and producing the granulomata and ulcers which appear at later stages of the disease.

It is possible that the squamæ and papules are the only true secondary symptoms of the systemic infection, and that the granulomata are caused by an effort of the skin to repel the germs attacking it from without.

We have yet to learn also to what extent the system may become infected through the granulomata, and whether it is not through them that the virus is admitted which produces the eruptions supposed by some to be symptoms of a fresh infection, and by others to be further manifestations of the original attack.

Such considerations suggest the need of external applications which will not only destroy the granulomata and cause the disappearance of the squamæ and papules, but will also prevent the invasion of the skin by frambœsial or other microbes.

Germicidal remedies should be freely used with this object, and it is with this intent that I directed the bodies of the patients herein mentioned to be washed twice a day with the sublimate soap.

The floors of yaws hospitals should also be frequently disinfected, as well as the bed-clothes and apparel of their inmates.

Children discharged from a yaws hospital and allowed to return to the dwellings in which they contracted the disease are thus exposed to further infection. In such circumstances the eradication of the affection is an impossibility. If the houses in which they live have wooden or stone floors, these should be disinfected. If not, the upper layer of the earth within the houses and in their immediate neighbourhood should be removed to a sufficient depth and thrown away, after having been disinfected, and should be replaced by fresh uninfected earth. Such a measure would furthermore assist in preventing the infection of other members of the family.

cultures produced about the same results as that of living ones.

(5) Klemperer, in 1892, sought to obtain immunity in man and animals by the subcutaneous injection of the milk of goats which were immunised with the cholera organisms.

(6) Sawtschenko and Sabolotny, following Klemperer's example, performed feeding experiments upon themselves and their laboratory assistants. They used agar cultures in which the organisms were killed by successive heatings at 60° C. to 70° C.

Sabolotny ingested 2·318 grams and Sawtschenko 1·758 grams of the dead bacteria. Then, in order to prove themselves immune to cholera infection, a few days after the last dose of the killed organisms, they neutralised their gastric juice with 100 cubic centimetres of a 1 per cent. soda solution, and a little later ingested 0·1 cubic centimetre of a twenty-four hours' bouillon culture of the living cholera spirilla. No symptoms followed, although it was stated that cholera organisms were isolated from the stools in each case.

(7) Brieger and Wassermann, in 1892, prepared a virus by growing the cholera spirillum in bouillon prepared with the thymus glands of calves.

(8) In 1893 Wassermann prepared an extract of the organism in the following manner: One thousand cubic centimetres of a three to five days' cholera bouillon culture were evaporated at 70° C. to 80° C. to a syrupy consistency. The residue was treated with absolute alcohol and the heavy precipitate then filtered off and dried over sulphuric acid.

(9) Klebs, after sterilising cultures of the organism, filtered and concentrated them on a water-bath. By precipitation with absolute alcohol the toxic substances were said to be separated out. These were then filtered and the filtrate used for experiments on immunisation. Klebs called the preparation "anticholerin," and demonstrated its protective effect upon guinea-pigs.

(10) Rosmainski, in 1894, precipitated sterilised cultures with acetate of lead, removed the lead with oxalic acid, concentrated the filtrate, again precipitated with milk of lime, and finally sterilised the filtrate. This fluid was said to contain protective substances.

(11) Recently the Swiss Serum and Vaccine Institute of Berne has prepared a prophylactic against cholera obtained from the organism by the method which Lustig and Galeotti described for the preparation of their plague prophylactic.

(12) In 1894 Issaeff worked along the line of inducing immunity by increasing the natural resistance of the individual. He found that different substances, such as tuberculin, nucleic acid, blood serum, bouillon, urine, and even physiologic salt solution, when injected intraperitoneally into animals, caused a transitory protection against infection with cholera spirilla. All of these substances possessed in common the faculty of calling forth either a local phagocytosis in the peritoneal cavity or a general leucocytosis; the resistance declined as the number of leucocytes returned to normal.

(13) Buchner and Hahn sought to obtain immunising substances from bacterial cells by special mechanical means. These authors triturated masses of the moist cholera bacteria mixed with infusorial earth and fine quartz sand. The organisms were subsequently subjected to a pressure of from four to five hundred atmospheres.

(14) Emerich and Loew showed that many bacteria, not only in the animal body but also in cultures, secrete enzymes, which in sufficient concentration are able to dissolve the organism producing them.

(15) Behring and Ransom, as well as Metchnikoff, Roux and Taurelli-Salimbeni, showed the possibility of producing a soluble poison from a highly virulent cholera culture. Behring and Ransom obtained a toxin by the filtration of cultures. Metchnikoff and Roux found that by growing the organism in collodion sacs in the abdominal cavity of guinea-pigs and afterwards upon a special medium containing gelatin mixed with serum a soluble toxin had been produced, which killed guinea-pigs when administered subcutaneously in amounts of one-third cubic centimetre per 100 grams weight.

(16) Finally, Besredka performed experiments upon animals and a single inoculation upon himself with cultures treated in the following manner: The organisms were grown upon agar for twenty-four hours and suspended in normal saline solution, after which enough immune serum was added to cause complete agglutination. The mixture was allowed to stand for twelve hours, during which time the amboceptors and uniceptors of the serum became fixed to the bacteria. The clear fluid was then poured off and the agglutinated organisms freed from the excess of serum containing unbound amboceptors by repeated washings with normal saline solution. The residue, consisting of organisms plus the immune bodies, was heated to 56° C. for one hour and then injected subcutaneously. Of the methods which have been employed, those of Haffkine and Kolle promise the best results.

Description of the Cultures Employed by Strong.

In my search for a practical vaccine, I first studied the local reaction and other toxic effects produced in animals after the injection both of a very virulent cholera culture and of one which, through cultivation on artificial media for a long period of time, had lost most of its virulence. The effects of the killed as well as of the living organisms were also studied with each culture. These two stems, for the sake of brevity, will be referred to in this article as "virulent" and "avirulent."

The avirulent organism was obtained through the kindness of Professor Wassermann. It had been isolated by R. Pfeiffer in the epidemic of cholera which occurred in Hamburg in 1894, and for nine years was preserved on artificial media in the laboratory and from time to time passed through animals. During the past year, however, the strain employed in these experiments had only been grown on artificial media and not inoculated into animals, but there is no doubt whatever of its representing a true though attenuated type of *Spirillum cholera asiaticæ*.

The virulent organism was isolated by Professor Kolle in Jaffa during the recent epidemic of cholera in that place. It reacted in all media in a perfectly typical way, and its morphology and motility were

also characteristic of the genuine cholera organism. It is agglutinated in high dilutions by the same cholera-immune serum, though not in so great ones as the avirulent strain.

The Cholera Toxin.

Since the publication of the first article of R. Koch, in which it was held that the cholera paroxysm, and especially the algid state, was to be regarded as a specific intoxication, due to the absorption from the intestine of the metabolic products of the cholera organism, many authors have attempted to produce experimental proof of the existence and to isolate this specific toxin; but in spite of careful work by Hueppe, Pfeiffer, Metchnikoff, Roux and many others, it is apparent that as yet no substantial evidence has been brought forth to show that the cholera spirillum produces, as do the diphtheria and the tetanus bacilli, a powerful soluble toxin. Even in fresh cholera bouillon and peptone cultures (two or three days old) there are found numbers of dead bacteria, from which, through plasmolysis and digestion, the intracellular toxins are set free. The most reliable evidence points to the conclusion that this toxin exists as an integral part of the bacterial cell.

The Ferments of the Organism.

The cholera vibrio, under certain conditions, produces at least four of these enzymes.

(1) Bitter found that it developes an acid in nutrient solutions containing starch paste.

(2) Fermi and Montesano succeeded in demonstrating that the cholera vibrio, in either sugar or proteid-free media, sometimes, though very inconstantly, produces inverting ferments.

(3) The cholera spirillum has been shown by Schoffer to produce a rennet-like ferment, which is similar in its action to the rennin of the cow's stomach.

(4) A peptonising ferment is, however, the most important.

Preparation of the Prophylactic.

After a consideration of the data given above and acting upon the supposition (1) that the cholera toxin exists as an integral part of the bacterial cell, and (2) that it is set free after the death of the organism and probably partly through the action of its own proteolytic enzyme, which is not destroyed at 60° C., I determined to find out whether the other immunising substances (agglutinin and bacteriolysin) as well as the toxin could not be separated from the bodies of the bacteria by a process of autolytic digestion.

Accordingly cholera spirilla from stems known to possess good peptonising powers were placed in an aqueous solution, carefully killed by heating and digested at 37° C. It was then found that the cholera receptors were set free in the fluid in great abundance, a fact which after filtration was easily demonstrable, since such filtrates possessed the power of binding uni- and ambo-ceptors (agglutinins and bacteriolysins) in a cholera-immune serum, as well as the ability, after injection into rabbits, of giving rise to the appearance of toxic symptoms, and in the case of the ultimate recovery of the animal, to the entrance of antitoxic, bactericidal, and agglutinative substances in the blood serum. Therefore, a filtrate prepared in this manner immediately recommended itself for trial as a prophylactic.

It was prepared in large quantities after the following manner: The surfaces of large flat-sided flasks (after the pattern of Kolle), filled with agar, were sprayed with twenty hours' bouillon cultures of the organism, and the flasks were then put aside for twenty hours in the incubator at 37° C. After this period the growth was suspended in sterile water, removed from the surface of the agar, and the suspension then placed in a sterile flask at 60° C. for from one to twenty-four hours. The mixture was afterwards put aside in the incubator at 37° C. for from two to five days, and finally filtered through a Reichel candle.

In certain experiments the milky fluid overlying the sediment of the bacteria at the bottom of the flask was poured off and the latter crushed and subjected to hydraulic pressure of 600 atmospheres. Later the extracts from these pressed organisms and the original aqueous solution, previously decanted, were together under pressure passed through a Reichel or Berkefeld filter.

Conclusions.

(1) By the autolytic digestion of carefully killed cholera spirilla in an aqueous fluid the receptors become separated from the bacterial cells and may be filtered off in solution.

(2) The injection of these free receptors into both man and animals furnishes a means of producing high bactericidal and agglutinative blood sera. The antitoxic value of these sera is, however, moderate.

(3) The subcutaneous injection into man of such free receptors is a process which is not only free from any danger, but one which produces practically no local disturbance and only a slight general reaction.

(4) Hence the method is a practical one for producing cholera-immune serum in man.

(5) It is highly desirable that this cholera prophylactic be given a thorough, practical test.

(6) It would appear hopeful that by the application to the pest is bacillus of a slight modification of this method a more satisfactory prophylactic against bubonic plague could be obtained.

A Short Essay on Insanity. By Charles Williams, L.R.C.P., L.R.C.S. Henry J. Glaisher, London, 1905, pp. 22. 1s.

Part I. of this essay is devoted to "The Importance of the Early Recognition of Insanity." Part II. indicates "How to Recognise that an Attack of Insanity is Threatening." This is a carefully and clearly written account of incipient insanity, and well worthy of perusal.

Illustrated Key of the Trematode Parasites of Man. By Ch. Wardell Stiles. Washington, 1904, pp. 66.

The term Distoma formerly indicated a group of the family *Fasciolidæ*, but recently it has been shown to be inapplicable, and therefore has been suppressed. The word Distomatosis is, however, still retained as

a clinically convenient term. Trematodes (Distomatosis) may affect different parts of the human body as follows:—

A.—Eye Flukes.

(1) ***Monostomulium lentis.*** Habitat, crystalline lens of the eye.

(2) ***Agamodistomum ophthalmobium.*** Between crystalline lens and its capsule.

B.—Lung Flukes.

(1) *Paragonimus westermanii.* Lung; causing parasitic hæmoptysis and Jacksonian (cortical) epilepsy.

(2) *Fasciola gigantica.* Liver of animals, lungs of man.

C.—Liver Flukes.

(1) *Fasciola hepatica.* Common liver fluke of ruminants and man.

(2) *Dicrocœlium lanceatum.* The lancet fluke. Liver of ruminants and man.

(3) *Opisthorchis felineus.* The European cat fluke. Liver of cats, dogs and man.

(4) *Opisthorchis noverca.* The Indian liver fluke of man.

(5) *Opisthorchis sinensis.* The Asiatic liver fluke. Bile ducts, pancreatic ducts, duodenum and stomach of man and cats.

D.—Intestinal Flukes.

(1) *Fasciolopsis buskii.* Busk's intestinal fluke. Small intestine of man; Asia.

(2) *Fasciolopsis rathonisi.* Rathonis's intestinal fluke; Asia.

(3) *Heterophyes heterophyes.* The Egyptian intestinal fluke. Man, dogs and cats; Egypt and Japan.

(4) *Gastrodiscus hominis.* The Asiatic Amphistome. Cæcum and colon of man; Asia.

E.—Venal Flukes. Bilharziasis or Egyptian Hæmaturia.

(1) *Schistosoma hæmatobium.* Veins of man and certain monkeys; Africa.

PRECIS DE PALUDISME. By Dr. J. Crespin, Paris, 1905, Librairie Maloine. Crespin's work is a complete and lucid exposition of paludism in all its phases.

Notes and News.

THE CLIMATE OF EGYPT.—According to reports from many sources, including that of Dr. Engel, of Cairo, the temperature throughout Egypt seems to be appreciably lowering. The present winter is exceptionally cold; but Dr. Engel contends that it is only during the summer months that the heat is really less.

THE United States Department of Agriculture intends to attempt to acclimatise the Egyptian papyrus in Florida or Louisiana.

A COLOUR-CHANGING PLANT.—In the *Transactions of the South African Philosophical Society* a plant belonging to the genus *Mesembrianthemum* is described as modifying, to some extent, its appearance, in accordance with the environment in which the plant finds itself. One species, the *M. bolusi*, produces two leaves, about the size and colour of a duck's egg, which resemble the stones amongst which it grows. We should like more information on this point.

LIEUTENANT-COLONEL G. BOMFORD, I.M.S., C.I.E., has been appointed Director-General of the Indian Medical Service.

MAJOR H. F. CLEVELAND, I.M.S., has been appointed medical officer to the Ameer of Afghanistan.

THE rates of half-pay for officers of the Indian Medical Service shall, in future, be the same as those laid down for the officers of the Royal Army Medical Corps.

THE Indian Government are encouraging officers of the Indian Medical Service to qualify in chemistry, so as to fit them for the chemical examiners' department. Other forms of specialism are to be encouraged, particularly for sanitary appointments and for asylum work.

MONOCHROMATIC TROUGH.—Messrs. R. and I. Beck, 68, Cornhill, London, E.C., have brought out a light filter for use during the illumination of microscopic objects viewed under high powers. The filter consists of a trough filled with a saturated solution of acetate of copper placed between the lamp and the microscope mirror.

THE "FOWL" TREATMENT OF SNAKE-BITE IN INDIA.—B. B. Ghosal, in the *Indian Medical Gazette* of January, 1905, gives an interesting account of the treatment of snake-bite by the application of a fowl to the wound. His account is as follows: The feathers having been peeled off from around the anus of a live chicken, it was made to sit on the wound, *i.e.*, the anus applied to the wound while a man was holding it in his hand over the wound. After five or six respiratory efforts, it first began to doze, pupils upturned, and then the head gradually fell down upon the chest. It seemed to shake off its drowsiness quickly twice or thrice and inspired again and so imbibed fresh poison. [! ! Ed.] Then the intervals between inspiratory efforts became longer, till at last its head fell on its breast, beak remained permanently open, and so expired. It took about five minutes to die. But notwithstanding the deaths of twenty chickens the patient's condition got worse and worse. It is interesting to note that, after injection of 20 cc. of Calmette's antivenin, fowls applied to the wound did not die, although kept with the anus on the wound for fifteen minutes at a time.

Medical News.

MEDICAL COLLEGE IN CANTON.—The Medical Missionary Society's hospital authorities in Canton have succeeded in obtaining sufficient funds to erect

a building suitable for a medical college. The building is of brick, and measures 83 feet long by 49 feet wide and 75 feet to the top of the observatory. The prospectus recently issued gives details of the course of instruction to be followed. There are ample clinical opportunities obtainable at this well-known hospital.

The *London Gazette* of January 24th contains a report from Mr. W. Wallace, C.M.G., Acting High Commissioner, in which, in reference to the military operations in Nigeria, he states: "The Medical Staff consisted of Dr. H. P. Lobb and Dr. W. T. Heally, who were devoted to the care of the sick and wounded. I consider them both deserving of much credit."

British Hospital in Constantinople.—A new British Seamen's Hospital was opened at Constantinople on January 19th. The Hospital, which contains fifty beds, was erected at a cost of over £30,000.

Banana Flour.—The Banana Food Company, 46, Artillery Lane, Bishopsgate, London, have prepared a flour—bananina—made from the dried unripe fruit of the banana. The flour can be made into a porridge with either milk or water, and is quite palatable.

Medical Appointments.

Dr. L. D. Parsons, Resident Surgeon-Superintendent of the New Providence Asylum, Bahamas, is to succeed Dr. J. E. Ker as Assistant Surgeon, Colonial Hospital, Police and Port Surgeon of Gibraltar. Dr. E. Ker has proceeded to Jamaica as Superintendent Medical Officer.

Sir Allan Perry, Principal Civil Medical Officer of Ceylon, returns to duty from leave of absence next month.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Corsica.

Antimalarial Campaign.

Dr. F. Battesti's report on the third campaign of the Corsican Antimalarial League was read at a meeting of the Paris Academy of Medicine in December last by M. Laveran. Dr. Battesti's statistics show the excellent results attained by metallic screening of doors and windows as a malaria prophylactic. The success was complete in many instances, no malarial cases occurring where the screens were carefully and efficiently used, and even in houses partially protected the number of cases of malaria fell from 47 per cent. to 11·60 per cent. The metal screens in no way interfered with ventilation or with the comfort of the occupants of the houses. Quinine prophylaxis was tried by the members of the league with excellent results. Destruction of Anopheles within a given area was also systematically attempted.

Cholera.

Prevalence of the Disease.

Turkey. — In Asia Minor during the two weeks ending December 19th, fresh cases 332, deaths 292.

Russia.—Between December 8th and 14th, at Djevat, fresh cases 226, deaths 203; Lenkoran, fresh cases 177, deaths 152; Guéoktchiosky, fresh cases 3; Bakou, fresh cases 12; Balakhany, fresh cases 3; Zanzégour, fresh cases 108; Djebrail, fresh cases 20; Samara, fresh cases 17; Sarakoff, fresh cases 11; Transcaspian districts, fresh cases 47.

Japan.

Prevalence of Tuberculosis.

According to recent investigations by S. Kitasato, human tuberculosis is as common in Japan as in Europe and America. Primary intestinal tubercular affections is common in adults and children, whilst it is stated that cow's milk is never given to Japanese children. In several parts of Japan human tuberculosis is prevalent, but the cattle in the districts are quite free of the disease. Experimental inoculation of cattle with tubercle bacilli by way of the veins or peritoneum causes only a mild infection; subcutaneous injection is ineffective. It would appear, therefore that in Japan cattle play no part in the infection of human beings with tuberculosis; and human beings seem incapable of infecting cattle.

Panama.

Six cases of yellow fever are reported to have occurred recently in Panama. Yellow fever is endemic in the district, but it is some time since any cases of the disease have been reported.

Plague.

Prevalence of the Disease.

India.—During the weeks ending December 17th, 24th and 31st, the number of deaths from plague in India amounted to 18,284 19,465 and 22,645, respectively.

South Africa: East London.—One fresh case and 1 death during the week ending December 24th.

Mauritius.—During the weeks ending January 13th and 19th, fresh cases 8 and 10; deaths 8 and 8.

Hong Kong.—During the weeks ending January 7th, 14th and 21st, fresh cases 1, 3 and 3, deaths 1, 3 and 3.

Siam.—Many cases of plague, some fatal, are reported from Bangkok in the *Shipping Gazette* of December 30th.

Straits Settlements.—One case of plague reported on November 22nd.

Aden.—Between December 3rd and 9th, fresh cases 23, deaths 16.

Brazil.—Between October 24th and November 20th, fresh cases 122, deaths 52.

Porto Rico.

ANKYLOSTOMIASIS.

Major Seaman has found that the *Ankylostomum duodenale* is a prevalent parasite amongst the inhabitants of Porto Rico. He is of opinion that the worm gains access through the naked feet of the farm labourers, whence they work their way into the intestines, become encysted, and subsequently develop into the adult worms. Seaman suggests, in addition to general sanitary reforms, that the labourers should be provided with shoes or clogs to prevent infection.

Yellow Fever on the Ivory Coast.

In a recent Foreign Office publication the British Vice-Consul on the Ivory Coast, J. P. Armstrong, draws attention to the prevalence of yellow fever at Grand Bassam, the chief seaport of the colony. Although the Ivory Coast is French territory, Grand Bassam is the port of entry to the British Possessions on the Gold Coast, and the paralysis of trade consequent upon the continuous outbreaks of yellow fever ever since 1899 is so acute that it has been proposed to abandon the town completely. The presence of yellow fever in and around the neighbourhood of the Ivory Coast has been denied by many, and although we are accustomed to refer in an indefinite way to the West Coast of Africa being the original home of yellow fever, whence the disease was carried to the West Indies during the slave traffic periods, yet pronouncement upon the subject has never been conclusive or precise. It would seem now, however, we have a definite statement before us, and it behoves some one to deal with the subject scientifically. That the death-rate amongst Europeans on the Coast is high is apparent from the fact stated by Mr. Armstrong that the mortality rate for 1903 amounted to no less than 50 per cent. of the population. If the French authorities are of the opinion that the disease to be dealt with is indeed yellow fever, it is surprising that they have not learnt the lessons taught us by experiences in Cuba before now, and set to work to exterminate the mosquitoes responsible for the spread of the disease. It is satisfactory to know that quite recently steps in this direction have been taken, and seeing that the marshy land around Grand Bassam does not extend further than about 200 yards, there should be no difficulty in draining or filling in the mosquito breeding grounds.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Lancet," December 24, 1904.

1. Hutchinson, Jonathan. Leprosy in China, p. 1808.
2. Drake, D. G. The Medicine of Assam, p. 1809.
3. Mosquitoes on Board Ship, p. 1811.
4. Cholera and Plague in the Near East.

(1) "LEPROSY IN CHINA.

"TO THE EDITORS OF THE 'LANCET.'

"SIRS,—Will you allow me to ask for information from the numerous readers of the *Lancet* who are personally acquainted with China and the Chinese? What I particularly want to know is whether there are any differences in the conditions of life in North and South China, which may be supposed to explain the prevalence through untold generations of a contagious disease in the one whilst it is entirely absent in the other. As all know, Pekin is in the extreme north of China proper, and Canton in the extreme south. Between them lies an immense inland district bordered by a sea-coast of many hundred miles. Now, in the whole Canton district leprosy is very abundant, whilst in the Pekin district (inclusive of Teintsin, the Liverpool of North China) it is reputed to be absent. It may be that further investigation will prove that the absence is not so absolute as some have assumed, but at any rate the evidence has been sufficient to convince so good an authority as Mr. James Cantlie, who in his prize essay on the subject strongly asserts it. In the district which intervenes the disease gradually diminishes as you go north. There is, of course, the freest possible intercourse between the two districts, and although the Chinese at home are not much given to wandering, opportunities for contagion must be of constant recurrence. In passing, it may be remarked that Mr. Cantlie credits the Chinese of the southern provinces with having introduced leprosy into almost all the islands of the southern hemisphere into which they have immigrated. They have, however, never been able to introduce, or at any rate to perpetuate, it in the northern half of their own kingdom.

"Can any plausible explanation of this extraordinary fact be offered? That the prevalence of leprosy is not influenced by climate, latitude, geological formation, or race, is now acknowledged by all, and the facts quoted would appear to be in direct opposition to any suggestion of contagion. If the Chinese have been able by personal infection to spread the disease in the Sandwich Islands and other places, why should they not with vastly increased opportunities extended over many ages, have succeeded in infecting men of their own race near at home. My own explanation of the facts is ready and definite. North China is a dry, sandy district, abounding in salt, and producing little or no fish. South China has abundant fish and its salt is imported and taxed. The Chinaman can introduce leprosy wherever he goes if only he finds there plenty of fish. His success becomes assured if only there be a deficiency of salt. The agent by which he works is the fish, which he cures so badly. Such is my creed, and I shall feel exceedingly indebted to any of your readers who can offer any other or produce any facts which may qualify it.

"I am, Sirs, yours faithfully,

"JONATHAN HUTCHINSON.

"*December 20th*, 1904."

(2) DISEASES IN ASSAM.

Drake, D. G., Medical Officer Teypur Medical Association, Assam, states that—

(1) Cancer is unknown in Assam amongst natives.

(2) Hepatic abscess is very rare, although dysentery is prevalent.
(3) Enteric fever is extremely rare.
(4) Malaria is very common.
(5) Ankylostomiasis is a great scourge.
(6) Kala-azar is very prevalent.
(7) "Sore foot" is common.

(3) Mosquitoes on Board Ship.

Aflalo, F. G., remarks that he has travelled in a steamer from Queensland to Plymouth Sound, with mosquitoes active in the saloon during the whole period of a voyage that lasted eighty days. He suggests that some of the mosquitoes may have completed their metamorphoses on the voyage, breeding in the residue of rainwater in the ship's buckets, boats, or other receptacles, or in fresh water tanks. Mr. Aflalo suggests efficient cleansing of all likely receptacles of fresh water so as to do away with possible mosquito breeding places.

"British Medical Journal," January 28, 1905.

1. The London School of Tropical Medicine, p. 204.
2. Plague in India, p. 204.
3. Yellow Fever on the Gold Coast, p. 204.
4. Japanese Students, p. 205.
5. The Antimalaria Campaign in Corsica, p. 205.
6. Ankylostomiasis amongst Miners, p. 217.
7. Health in West Indies. Robert Boyce, F.R.S., p. 223.

With the exception of articles 4 and 8, all the above are dealt with elsewhere in the present issue of the Journal of Tropical Medicine.

(4) Japanese students are reported by M. Revon, for some time a Professor in the University of Tokio, to suffer from devotion to their studies. Several of the students are stated to have died from over-study. The determination of the Japanese to attain efficiency is in no branch of learning more marked than in medicine, and the Japanese maxim, "Oudji yori sodatchi," meaning "Education is more than birth," is acted up to with untiring zeal.

(8) Professor Boyce, of Liverpool, writes contradicting a statement attributed to him on returning from West Africa, that "West Africa is likely to become a health resort." The health of Europeans in many of the coast towns shows a marked improvement in recent years, owing to antimalarial work and improved sanitation generally, but Professor Boyce does not wish to imply that the improvement is so rapid as some would gather from the remarks wrongly attributed to him.

Epidemiological Society, December 9, 1905.

Ticks and Tick-transmitted Diseases.

Nuttall, G. H. F., at the meeting of the Epidemiological Society, read a paper on "Ticks and the Diseases transmitted by Ticks." Ticks are blood-sucking parasites belonging to the order *Arachnidæ*, and attack most of the mammalia and birds, some reptiles, and several insects.

Pathologically, ticks are interesting, from the fact that they are the intermediary hosts of the piroplasmata (and of one spirochæte) which induce in cattle, horses, sheep and dogs, diseases such as the Texas or red-water fever in America and Queensland, and the Rhodesian fever in South Africa. The female lays its eggs on the ground, and the young larvæ attack the cattle and other animals that come within their range. Cattle are attacked in America by the *Rhipicephalus annulatus*, in Queensland and Africa by the *R. australis*, and in Rhodesia and the Cape by *R. appendiculatus*. Sheep in Europe are attacked by the *Rhipicephalus bursa*, and in Africa by the *Amblyomnia hebræum* (Koch). Dogs in South Africa are attacked by the *Hæmaphysalis leachii*, and in Europe by a dermatocentor. Man and several animals are attacked by the *Argus persicus* in Persia, Africa, and the Rocky Mountains.

The incubation period in Texas and Rhodesian fever in cattle extends to eight or ten days, and in dogs to fourteen or twenty-one days.

In animals that recover from the fever, immunised or "salted" cattle, the piroplasmata persist in the blood for an indefinite time, rendering such animals dangerous to others. The *Piroplasma trigeminum* of Texas fever and the *Piroplasma parvum* of Rhodesian fever are not mutually protective.

The only hope of eradicating the disease lies in the extermination of the tick by insecticides, by burning the grass of infected pastures, and by quarantine, which could be accomplished by allowing horses only to be pastured for two years in the fields where cattle had suffered from fever, and *vice versâ*, so that the respective ticks might be starved out. Referring to the geographical distribution of the disease, Dr. Nuttall states that at the present time tick fever is met with as follows:—

(1) Bovine piroplasmosis (Texas or red-water fever) occurs in the United States of America, West Indies, Venezuela, Uruguay, Paraguay, Brazil, and various parts of Europe, Africa, India, China, the Philippine Islands, and Queensland.

(2) Rhodesian fever (bovine) occurs in Rhodesia, South East Africa, and apparently in Transcaucasia.

(3) Ovine piroplasmosis occurs in Roumania, Italy, France, in South Africa, the West Indies, and the United States.

(4) Equine piroplasmosis occurs in Germany, South Africa, Madagascar, and Venezuela.

(5) Canine piroplasmosis is met with in France, Italy, North and South Africa, and India.

In Brazil and the Argentine a tick—the *Argas miniatus* — caused a disease in fowls, the specific organism being the *Spirochæte marchouxi*. Particular interest attaches to this disease, owing to the fact that Schaudinn had recently described a spirochæte developing out of a trypanosoma, which was itself a phase of the halteridium, an endoglobular parasite of birds.

Sir Patrick Manson, who presided at the meeting, remarked that the reference in Dr. Nuttall's paper to the conditions under which piroplasmosis recurred was particularly interesting, as illustrating the etiology of blackwater fever, which might be a disease of this kind, the malarial attack or the large dose of quinine simply acting as an exciting cause. The karapatti disease of man occurring along the Zambesi was spread by a tick—the kufu. Probably the karapatti disease and blackwater fever are examples of

human piroplasmosis. Dr. G. C. Low, of the London School of Tropical Medicine, took part in the discussion, and remarked that a spirillum had been demonstrated in karapatti disease. Rhodesian fever was spreading southwards and destroying some 90 per cent. of the cattle.

"Annales de l'Institut Pasteur," June, 1904.

1. (No. 6) Sur quelques propriétés physiologiques des différents venins de Serpents. By F. Noc.

2. (No. 7) Etudes sur quelques epizootics de l'Indo-Chine. By M. Yersin.

"Gazette des Hopitaux," December 24, 1904.

ELEPHANTIASIS.

Carle and Jambon describe elephantiasis as originating from nervous causes in trophic œdema, in trophoneurosis, in interstitial neuritis and in tabes. Whether it arises in the veins or in the lymphatics, or whether it is caused by an external infection of the skin or an internal hardening, inflammation is the primitive lesion in each and every case. The microscope shows small round cells, surrounding dilated capillaries with thickened walls covered by a cell-infiltrated cutis. The interstitial hyperplasia of the skin is due to inflammatory œdema. Mechanical blocking alone is not sufficient to cause elephantiasis, though it is a factor usually present.

"Le Caducée," December 17, 1904.

SPIRILLAR DYSENTERY.

Dantec, from a clinical study of spirillar dysentery in Bordeaux, states that there is no increase of temperature in spirillar dysentery which at once distinguishes it from dysentery of the bacillary type. The liver is not affected even though the disease may become chronic, thus distinguishing the affection from dysentery of the amœbic variety. Though fairly common at Bordeaux, no cases of the disease have been recorded except in the west of France. It is rapidly cured by antiseptic enemata; treatment by the mouth has little effect. Diagnosis is made by placing a piece of mucous membrane obtained from the stools on a slide. A grey central part is seen surrounded by a transparent white of egg margin. The central part is teased out, stained, and washed with water; alcohol has the disadvantage of decolorising the specimens, which stain faintly. Cultures on agar develop bacilli not staining by Gram; these may be *Bacillus coli* or early forms of spirilla, though the change from bacilli into spirilla has not been seen. No *post mortem* has been made, as all the cases recovered.

"Progrès Médical," November 26, 1904.

Sur la nature de la pretendue fièvre jaune de Panama (On the Nature of the So-called Yellow Fever of Panama). By Dr. Urriola.

Urriola thinks that the so-called yellow fever is not yellow fever at all, but a malignant form of malaria.

"Semaine Médicale," December 7, 1904.

La rougeur vive et sèche de la langue comme signe pathognomonique des abcès tropicaux du foie (Red and Dry Tongue a Sign of Abscess of the Liver). By H. de Brun.

"Thesis de Lille," 1904.

ACTINOMYCOSIS OF THE MAMMA.

Poiteau describes invasion of the breast by actinomycosis through cracks in the nipple, rarely through the ducts. The disease passes through three stages: invasion, inflammation and suppuration. The part affected is the connective tissue of the organ, which becomes indurated and compresses the gland tissues; it is seldom the gland tissues are primarily affected. At first, when the disease is only suspected, iodide of potassium treatment should be adopted; when this fails, or when the disease is advanced, all the indurated tissue should be freely removed. Enlarged axillary glands, when they exist, do not require removal, as the parasite is not present in them.

"Arch. für Schiffs and Trop. Hyg.," December, 1904.

Mission to Brazil for the Study of Yellow Fever, February 10th to July 4th, 1904. By MM. Otto and Neumann.

Otto and Neumann declare that none of the plans adopted in Brazil for the eradication of yellow fever have proved efficacious.

"Arch. für Schiffs und Trop. Hyg.," vol. vi., 1902.

THE ANOPHELES OF WEST AFRICA.

Dr. Hans Ziemann collected a large number of mosquitoes in Duala and vicinity, between March, 1899, and April, 1900; in Victoria (Cameroon Mountains), in May, 1900; in Little Popo, Togo and vicinity, in June of the same year, and in July he collected a number in Monrovia. The specimens were immediately despatched to Europe for classification, and Theobald described some zoologically, while Dr. Enderlein, of the Zoological Museum in Berlin, undertook to classify the Anopheles; the Culices have hitherto not been classified.

Dr. Hans Ziemann found it a general rule that the Anopheles were incredibly more numerous during the rainy season and the time of transition from drought to rain than during the dry season. It was a peculiar circumstance, that whereas a still unclassified culex was found on the Cameroon Mountains, at an altitude of 1,600 metres, Anopheles were never found to exist in Buëa, situated at an altitude of only 900 metres, and which is considered to be the healthiest place in the Cameroon Mountains.

In the Molive Plantation, near Victoria, 220 metres above the level of the sea, Anopheles were still very frequent, while in the Boana Plantation, 260 metres above sea-level, they were very scarce. Moreover, Dr. Ziemann found that the Anopheles in Victoria were all capable of sucking human blood within a few hours after they had emerged from the pupa, while the Anopheles in Togo could only be induced to suck twenty-four, sometimes forty-eight, hours after their exit from the pupa. The following is the list of the Anopheles found:—

Anopheles costalis, Loew. Very frequent in Cameroon on the Joss Plain, especially in the rainy season, also on the upper reaches of the Wuri River, in Victoria, on the Cameroon Mountains. Moreover, in Togo, in the Nachtigall Hospital, in Upper Guinea, and in Monrovia.

Anopheles funestus, Giles. Frequent in the huts of the natives in Victoria in the rainy season.

Anopheles Pharœnsis, Theobald. Frequent on the upper reaches of the Wuri River, near Duala; found also in Victoria, at the foot of the Cameroon Mountains, in September; also in Lome, Togo, and in Upper Guinea.

Anopheles Ziemanni, nov. spec. (described by Grünberg in the *Zoolog. Anzeiger.*, vol. xxv., No. 677, July, 1902). On the Wuri River, in large numbers, but never observed in Duala, close by.

Anopheles costalis, funestus, Ziemanni. All these kinds are transmitters of Malaria.

"Deutsche Medizinische Wochenscrift," December 8, 1904.

INFECTION WITH ANKYLOSTOMUM THROUGH THE SKIN.

Lambinet injected several hundred larvæ of ankylostoma beneath a dog's skin. The animal died twelve days after, when the middle portion of the small intestine, not the duodenum, was found to contain several hundred young worms of the same age. These resembled the worms found after the same length of time in cases of mouth injections. In the part of the intestine occupied by the worms the mucous membrane was seen to be covered with blood-stained mucus and exhibited recent hæmorrhages.

"Gazetta degli ospedali edelle cliniche," November 13, 1904.

MIGRATION OF ASCARIDES FROM THE INTESTINE INTO THE PANCREATIC DUCT, FOLLOWED BY AN INTERSTITIAL PANCREATITIS.

G. Ghedini verified the presence of ascarides in the pancreatic duct, and the substance of the pancreas itself, in a child who died after suffering from indefinite abdominal and cerebral symptoms. The child had complained of recurring abdominal pains and inveterate hiccough, and developed cerebral symptoms resembling basilar meningitis.

"Il Policlinico," November, 1904.

Arterial Pressure Changes in Malarial Infection. By G. Quadri.

Sphygmomanometer traces, by Quadri, in cases of malaria give the following results:—

(*a*) A slight rise in arterial tension, varying with the length of infection and the resistance of the individual, but is not affected by the type of the parasite.

(*b*) The heart muscle responds to digitalis, but its time effect was of shorter duration and of less marked extent than in healthy persons.

"Roussky Vratch," November, 20, 1904.

DYSENTERY IN MANCHURIA.

V. G. Korotchenski, in his report on dysentery among the Russian troops in Manchuria, gives details of the treatment of the disease by Shiga's and Gabritchevsky's serum. In all, 70 cases of dysentery were treated by doses of from 20 cc. to 110 cc. at one injection. In mild cases, 20 cc. of the serum proved sufficient to check the disease; in severe cases, 60 cc. were necessary; and in very severe attacks, 100 cc., repeated when required, were administered. In advanced and neglected cases the serum proved useless, but when given early, the treatment seemed more effective than any other mode of treatment. In no case treated by this serum did a relapse occur, nor did acute dysentery become chronic. No other form of treatment was followed until the evacuations became fæcal, when irrigation of the bowel by potassium permanganate solution, and bismuth or salol by the mouth, were at times employed.

"Roussky Vratch," December 4, 1904.

The Cholera of Baku. By I. M. Leplinski and I. S. Eliashvili.

Baku gets its water supply partly from the Caspian Sea and partly from wells. The water from the wells has a bitter and slightly salt taste, and the sea water is distilled for consumption. An examination of the water from the swimming baths showed cholera vibrios, and when those baths were closed cholera subsided. The baths were mere tanks, which were "cleaned" once a month, and in the baths clothes were washed and ablutions performed. During the cholera epidemic the authorities prohibited the use of the baths.

"New York and Philadelphia Medical Journal," July, 1904.

OBSERVATIONS ON DYSENTERY IN THE PHILIPPINES.

F. M. Hartsock states that in the Philippines dysentery occurs in three distinct types:—

(1) Catarrhal dysentery, due probably to a hyperæmic condition of the chylopoietic viscera, plus irritation produced by bacterial, parasitic or chemical agencies.

(2) Acute specific dysentery, in which a bacillus "related in its cultural and physiological properties to the *Bacillus typhosus*, which agglutinates with the blood of patients suffering from this form of dysentery.

(3) Amœbic dysentery is dependent upon or associated with the presence of a parasitic amœba. Of the several terminations of the amœbic form the most common, according to Hartsock's observations, is in sprue.

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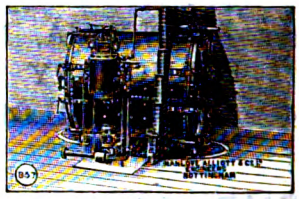
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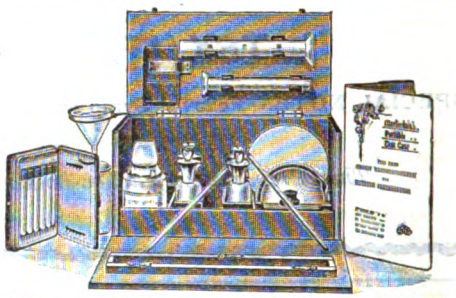


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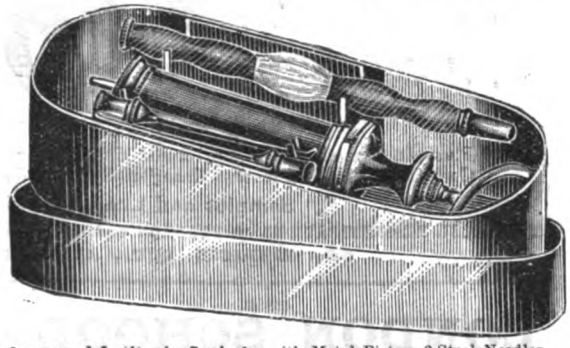
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The Journal of Tropical Medicine.

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Original Communications.

SOME CASES OF INTEREST IN THE WARDS OF THE SEAMEN'S HOSPITAL, ROYAL ALBERT DOCKS, LONDON.

By James Cantlie, M.B., F.R.C.S.
Surgeon to the Hospital.

I.—Deep-seated Hydatid in the Lung; Operation; Recovery.

The patient came into hospital under the care of Sir Patrick Manson, suffering from signs and symptoms of hydatid of the left lung. He had been in Australia, where, no doubt, he caught the infection. On admission the cough was troublesome and the expectoration contained from time to time pieces of hydatid membrane of a fair size, the larger pieces measuring 1½ inches by 1 inch. Pus, some blood, and a considerable quantity of sero-sanguinolent frothy mucus was coughed up several times a day, but no hooklets were ever observed. On the side of the chest, about midway between the spine and sternum, the percussion note was of rather higher pitch than elsewhere, but the breath entered freely over the patch. There were no signs of pleurisy. The temperature towards the evening rose regularly a degree or two, the patient suffered considerably from bursts of tormenting cough, and although his appetite was fairly good, he lost weight to some extent.

The *diagnosis* pointed to a deep-seated pulmonary hydatid which had burst into a bronchus near the root of the left lung.

The cavity was surrounded by healthy lung, so that between it and the surface some three or more inches of healthy lung intervened, with no pleuritic adhesions.

Operation.—Under an anæsthetic a T-shaped incision was made two inches in front of the angles of the seventh and eighth ribs, and two and a half inches of each of these ribs removed, the pleura being left intact. An attempt was made to transfix the lung by passing a curved needle rapidly through the uninjured pleura and lung. The moment the needle punctured the pleura, however, the lung retracted and air entered the pleural cavity. The wound was thereupon packed and the ordinary dressings applied. The signs and symptoms of pneumothorax continued for forty-eight hours, when all evidence of air in the pleural cavity disappeared. On the eighth day succeeding the operation the wound was dressed, when the opposite layers of the pleura were found adherent. On the twelfth day the hydatid cavity in the lung was searched for by the needle of an aspirating syringe. The cavity was reached at the first puncture four and a half inches from the level of the skin (three inches from the exposed pleural surface) and pus and sero-purulent fluid drawn off. Along the tract of the needle a long, narrow trocar and cannula was introduced, the trocar withdrawn and through the channel of the cannula a filliform bougie introduced and tied in place. After three days, hollow, straight dilators (such as are used for dilating urethral strictures), of graded increase in size, were passed rapidly one over the other, using the filliform bougie as a guide, until a size corresponding to a No. 14 English catheter was reached. A trocar and cannula was introduced along the channel thus made, the trocar withdrawn, and through the cannula a tube one-third of an inch in diameter stretched up a long steel rod, after the manner I employ for liver abscess (Manson's method), was introduced and the cavity left to drain. After a few days the forefinger was easily introduced along the tract thus formed, the parts well dilated and iodoform gauze packed into the wound. Gradually the discharge ceased, the cavity and tract healed, and the patient left the hospital well.

The difficulty in this case was how to reach the hydatid through an intervening layer of healthy lung three inches deep.

II.—A Pebble in the Prostate; Perineal Lithotomy without a Staff.

A lad, aged 16, came into the hospital under Sir Patrick Manson's care with indefinite abdominal symptoms. The urine contained blood occasionally, pain over either kidney was complained of at intervals, and there occurred colicky pains with alternating constipation and diarrhœa. Examination of the bladder by a sound proved negative. The history and physical signs were so indefinite that an exploratory laparotomy was performed by Mr. William Turner, but no abnormality of any kind was detected. Subsequently the right kidney was explored, with the same negative result. When the patient came into my charge the signs and symptoms pointed to the urethra as the seat of trouble; and as it was impossible to introduce a staff into the bladder, I operated without a guide. The bladder was opened by a median perineal incision, and the knife, as it reached the prostate, grated upon a hard substance in the prostatic tissue which, when removed, proved to be a small pebble about the dimensions of a full-sized green pea. The wound healed speedily, and the patient made a good recovery. Before leaving the hospital the lad confessed to having pushed a pebble up the urethra and worked it backwards along the channel as far as he could. The pebble had become gradually imbedded in the prostatic tissue, causing occasional hæmorrhage, intermittent retention of urine, and indefinite abdominal pains.

III.—A Case of Bilharzia, in which a Calculus Formed Round Silk Ligatures that had Dropped into the Bladder after Supra-pubic Lithotomy.

The patient, a European, some time resident in Egypt, had been the subject of bilharzia for some two years before admission to the Seamen's Hospital under Sir Patrick Manson. When he came under my care he was suffering great pain at frequent intervals in the perineum and along the urethra, and through the centre of a supra-pubic scar, the result of a previous exploratory operation upon the bladder, a fistulous opening discharged urine continuously.

The patient was in a sorry plight, suffering excruciating pain at intervals, with urine dribbling from a

supra-pubic fistula, regular exacerbations of fever at night, wasted in frame, and depressed in mind.

Operation.—A left lateral lithotomy was performed on February 9th, 1904, when a large friable calculus was found occupying the whole of the lower part of the bladder. I found it impossible to remove the calculus intact, owing to its size and to the readiness with which it broke down when touched. The fragments and gritty material were partly scooped away, and then the bladder was freely washed out with plain warm water from the old supra-pubic fistulous opening, the water escaping by the perineal wound. A large lithotomy drainage tube was introduced through the perineal wound. The patient did well, and the supra-pubic fistula gradually contracted and healed.

In the largest piece of calculus removed a silk ligature was found firmly embedded and evidently serving as the nucleus of the entire calculus. That this came from the old supra-pubic wound was evident, because during the process of healing a similar ligature was found protruding from the supra-pubic wound. The former had evidently dropped down from the wound on the dome of the bladder to within its cavity, whilst the latter was retained in the edge of the original wound. The calculus was composed of the ammonio-phosphate of magnesium.

General Remarks on Lithotomy.

The cases just related constitute the 76th and 77th cases of lithotomy I have performed. Of these, all were by way of the perineum, except one by the supra-pubic method. Of the perineal lithotomies, 65 were by left lateral pithotomy, 10 were by median lithotomy, 1 by right lateral lithotomy. Except for an operation to afford relief *in extremis* all the perineal lithotomies recovered. The supra-pubic case died.

The circumstances under which the supra-pubic operation was performed were as follows: There were three cases for lithotomy at the Alice Memorial Hospital, Hong Kong, to be done on one day. I had just done two lateral lithotomies, and the third patient was being put into the lithotomy position, when Inspector-General Lloyd, C.B., R.N., who, along with several navy and army surgeons, were present at the operations, asked me why I did not do the supra-pubic operation. I protested that I had always denounced the supra-pubic method of opening the bladder as being a regression to mediæval methods, an unscientific procedure, and dangerous to the patient. However, I was over-persuaded. The patient was taken down from the lithotomy position, a rectal bag introduced into the bowel, distended with air in the usual manner, and the supra-pubic operation proceeded with. The operation was carried out to my own and the onlookers' satisfaction, and a large stone removed. The only complication that occurred during the operation was that the india-rubber air-bag introduced into the rectum burst just when the bladder was being opened. It seemed at the time as though no untoward development had occurred, but as the patient died some days afterwards it was inferred that the occurrence had to do with the result.

Curiously enough, Dr. John Bell, then surgeon in the same hospital with myself, now Senior Medical Officer in charge of the Government Civil Hospital, Hong Kong, had performed a series of lateral lithotomy operations with complete success. The only case of lithotomy he lost up to the date I speak of, 1896, was one performed by the supra-pubic method. It may have been a coincidence that the only cases of lithotomy lost by Dr. Bell and myself were performed by the supra-pubic method. It may have been want of surgical skill on my part, but this argument cannot be advanced against Dr. Bell. If more skill is required for the supra-pubic operation than for the perineal operation, then surgeons of indifferent capacity should do the latter in preference to the supra-pubic method. I am, however, not yet convinced as to the superiority of the supra-pubic operation for removing calculi (or even of other growths) from the bladder, and the two cases of lithotomy I record above still further confirm me in my opinion. The pebble in the boys prostate could never have been discovered had the bladder been opened by the supra-pubic method. In the latter case, in fact, the operation caused the calculus, the concretions collecting round a ligature which had dropped into the bladder.

The supra-pubic method of performing lithotomy I still regard as a surgical regression, as an unscientific method of dealing with. The only recommendation, perhaps, it possesses is that it is easy of performance and for the indifferent or inexperienced surgeon it has advantages.

IV.—Injury to Right Side of Cranium in Childhood; Left Paresis; Epilepsy; Operation; Cyst in the Brain; Recovery.

Preliminary Note.

W. B., a man aged 20, was hit by a cricket ball on the right side of the cranium when eight months of age. He remained unconscious for three weeks and recovered with paresis of the left upper and lower extremities. When sixteen years of age he developed epilepsy, having as many as seven or eight fits during the twenty-four hours. Under treatment the frequency and severity of the fits subsided, until they were reduced to about one per week; on leaving off medicine the fits recurred. Treatment again reduced the fits to about two during the week, for about four months before admission. The patient on admission showed a scar and irregularity of bone over the right parietal region, some limping with the left foot in walking, stiffness of left elbow, and the left hand inclined to be claw-like. The patient was sent by Dr. Outterson Wood, at the patient's own request, to be operated on.

Operation.—On October 26th, 1904, the right Rolandic area was exposed by a horse-shoe-shaped flap of scalp and bone.

The skull just below the parietal eminence was a mere shell for about the area of one inch, and on the inner aspect of this piece of bone the dura mater was firmly adherent. On detaching the bones and dura mater a cyst was opened, from which fluid resembling cerebro-spinal fluid escaped; the cyst wall was enlarged and the finger introduced into the cavity. The cyst led below into the right lateral ventricle, the floor of which could be both seen and felt. The walls of the

cyst bled very freely, but cerebro-spinal fluid ceased to flow, showing that although the cyst opened into the right lateral ventricle that cavity was shut off from the other brain spaces: the cavity was packed with iodoform gauze. The patient on the fifth day after the operation developed a high temperature, 104°, and had one or two well-marked rigors. Removal of the gauze found the wound quite healthy, but a copious hæmorrhage ensued and the wound had to be packed again, and some pressure applied. The temperature gradually fell, the packing was left off, and the wound healed kindly. During recovery the patient had what appeared to be an influenza attack, and two or three epileptiform attacks ensued. Since then, however, only one very slight "attack" has occurred, so that from the first week of November, 1904, to the second week of February, 1905, the patient has been almost free from epileptic seizures. Power in the arm and leg is somewhat increased since the operation.

V.—Five Cases of Liver Abscess during 1904; Recoveries.

Case 1.—V. R., a Lascar, aged 25, was admitted under Sir Patrick Manson's care with pain in the region of the liver. Dulness commenced above at the level of the fifth rib in the nipple line, and extended horizontally backwards from this point to the spine. The lower border of the liver was not advanced beyond the normal limit, but on rapidly succussing the liver by one hand beyond the right lower rib and the other hand on the epigastrium, severe pain was elicited, showing the lesion to be in the supra-hepatic region.

On May 6th, 1904, pus was found by the sixth puncture of the needle of an aspirating syringe three and a half inches from the surface in the nipple line. A large (liver abscess) trocar and cannula was introduced far back in the axillary line, the trocar withdrawn, and a large india-rubber tube stretched on a metal rod (Manson's method) was introduced into the cavity. Pus flowed freely, and the syphonage method of drainage established. There was some delay in recovery owing to the removal of the tube at too early a date, but in reintroducing the drainage tube the patient made a good recovery. In this case no history of dysentery was obtainable. Pus contained mixed micro-organisms.

Case 2.—S. K., a Lascar, aged 21, after a fall on board ship, complained of pain over liver. An incision was made two weeks before admission over the seventh interspace in the anterior axillary line whilst on board ship and the abscess opened.

On admission on September 1st, 1904, the patient had a normal temperature, but looked ill. Through the wound in the right side a probe could be passed along a sinus for the distance of four and a half inches downwards and backwards into the liver. A large quantity of liver pus flowed from the wound.

A tube stretched on a metal rod was inserted into the abscess along the old sinus on September 1st.

On September 30th the tube was removed, and by October 5th the wound was entirely closed.

No history of dysentery ascertainable. The fall on board ship seems to have been the origin of the trouble, so that the abscess may have been of traumatic origin.

An abscess of the liver, however, due to injury, is a rare occurrence, and as this patient came from India, and may have had intestinal troubles of a dysenteric nature, the conclusion as to the lesion being of traumatic origin is not positive.

Case 3.—H. J. T., aged 42, British. In May, 1903, had an attack of dysentery whilst residing in British Guiana; the dysentery continued until March, 1904, when the bowel trouble mostly subsided; but he began to have indefinite pain in the region of the liver and to cough up yellow matter from the lungs, tinged at times with blood.

On admission to hospital on July 2nd, 1904, the cough was distressing, lying down was almost impossible, and he expectorated some twelve ounces of dark reddish-brown sputum with slightly nauseous odour every twenty-four hours. The liver did not reach beyond the normal limits below, but the upper dulness extended almost horizontally backwards from the level of the fourth interspace in the nipple line.

On July 7th pus was found at the first puncture in the seventh right interspace, just in front of the mid-axillary line. A large trocar and cannula was inserted, the trocar withdrawn, and a stretched rubber tube introduced along the cannula, and the cannula withdrawn. Syphonage was employed, and during the first twenty-four hours 14 ounces were drawn off. Immediately after the operation expectoration ceased, and the temperature fell to normal.

On July 14th dysenteric stools were passed, but on the following day the dysentery ceased. On August 8th the patient left, quite recovered.

Case 4.—A. S. G., aged 25, British. Had lived three years in India. Had dysentery twice. April 22nd, 1904, operation for liver abscess; pus was found at the fourth puncture in the seventh intercostal space in the mid-axillary line. The abscess was treated in the usual way by trocar and cannula and syphon drainage. Ten ounces of pus escaped at first puncture, and 12 ounces by syphonage during the first twenty-four hours. On May 5th bile and mucus only escaped by tube. On May 14th the patient left, quite recovered.

Case 5.—W. W., aged 44, British, a resident in the Congo. May, 1903, had dysentery. In June got hepatic pain with high temperature. This condition continued until November, when a chocolate expectoration developed and pus pointed between tenth and eleventh right ribs in the axillary line. The abscess was incised by a surgeon on the Congo, and a quantity of pus escaped. On admission to the Seamen's Hospital on February 11th, 1904, chocolate-coloured pus was being expectorated in quantities, and pus flowed from the old wound; the patient was wasted and slightly jaundiced. On February 12th I opened up the old wound and found pus between the diaphragm and the ribs, and an aperture in the diaphragm which led to the liver. The wound was opened up and freely drained. On February 18th the patient developed a tertian malarial fever, confirmed by blood examination. With appropriate quinine treatment the fever subsided, and on February 27th the patient left the hospital with the liver abscess healed.

VI.—Abscess in Upper Lobe of Right Lung, with Empyema in an Old Case of Liver Abscess.

F. H. D., aged 26, British. Seven years in India. Had dysentery in Assam in 1899. On October 19th, 1903, developed signs and symptoms of liver disease; was operated upon in India by an incision in the right axillary line over the seventh intercostal space. The cavity was drained and allowed to heal. Returned to England, April, 1904; on way home became ill with cough and fever again. On admission to Seamen's Hospital on May 19th, 1904, the lower border of the liver was in normal position; the dulness along the upper border extended upwards and backwards, merging with the dull lung area at the right base. On May 25th the liver was searched for pus; no pus was found, but the needle again and again struck a hard mass in the upper part of the liver, which was assumed to be, and was proved afterwards by *post-mortem* examination to be, the seat of the old liver abscess, now a mass of indurated fibrous tissue. On May 26th pus was found in the lower part of the right pleura cavity. The large trocar and cannula was inserted, and a large drainage tube introduced in the usual way. Pus flowed freely by syphonage. On June 1st, owing to the quantity of pus coming away, 2 inches of the eighth right rib were removed in the axillary line. On June 9th a counter-opening was made between the angles of the ninth and tenth ribs, and a drainage tube passed through from one opening to the other. The quantity of pus was so excessive that the portions of the two ribs between the drainage apertures were removed to the extent of 4 inches, and the cavity examined by the hand introduced into the chest and by illumination. The lower lobe of the right lung was seen to be collapsed, and pus was seen coming from the upper part of the chest cavity. The patient died shortly afterwards from exhaustion. *Post-mortem.* A healed abscess was found in the liver; there was no pus in the lower lobe of the right lung, but in the upper lobe a large abscess existed which discharged freely into the pleural cavity, and proved to be the source of the pus in the pleura. There was no continuity between the abscess in the lung and the liver abscess; the pulmonary abscess must have been embolic in nature. The only treatment available in a case of the kind, with the lower lobe collapsed and the upper lobe destroyed by an abscess, would have been removal of the entire lung.

BUBONIC PLAGUE IN SIAM.

By Percy A. Nightingale, M.D.

The first known case of bubonic plague in Siam was discovered in Bangkok on December 21st, 1904. The outbreak occurred among the Bombay Indian traders on the west bank of the river, and some eight fatal cases took place within the first two or three days. By the last mail the disease did not seem to be gaining ground, but since then telegrams have announced several more deaths.

Bangkok was founded 123 years ago, and contains a population of over half a million, of whom some 220,000 are Chinese. Eight years ago a Sanitary Department was established, Dr. Nightingale being the first Medical Officer of Health, but the work progressed slowly at first—reforms not being easily initiated in a treaty port, while the shipping community did not seem to appreciate the necessity of quarantine regulations against arrivals from infected Chinese ports.

By degrees a great improvement took place, and sanitation is now making rapid strides, in spite of many drawbacks incidental in a large mixed population.

The present Medical Officer of Health, Dr. H. Campbell Highet, devotes his whole time to his official duties, and has a well-equipped bacteriological laboratory at his disposal. He is taking most energetic measures to stamp out the disease, and has been practically given a free hand by the Siamese Government in the matter.

It is to be hoped that these measures will be successful, though on account of climatic conditions, and the density of the population in the Chinese quarter, the task will by no means be an easy one.

"Revista de Medicina Tropical" of Havana, November, 1904.

Filariasis; Preliminary Notes Deduced from Practical Experiments, Showing the Site where the *Filaria Nocturna* Leaves the Body of its Host, "*Culex Pipiens.*" By Dr. M. G. Lebredo.

Dr. Lebredo corroborates the discoveries of Low and James as to the presence of filariæ in the labium of the mosquito.

This discovery suggested the possibility of the filaria leaving the mosquito through its proboscis; but through what part of the labium? and how? and when? are points that as yet have not been determined by actual observation.

His observations, which he is about to publish *in extenso*, show that the filariæ reach their full development after the fourteenth day, when they find their way to the head and proboscis of their host; if the normal conditions for their exit have not presented themselves, the filariæ are to be found in the head and labium of mosquitoes as late as the thirty-eighth day after infection, although the insects were fed exclusively on sugar and water after their first meal of blood.

His experiments lead to the following preliminary conclusions:—

(1) The filariæ escape from the live mosquito through the labium when they have reached a certain stage of development, provided that certain conditions are present. These conditions can be produced and reproduced at will, and form an interesting experiment.

(2) The filariæ leave the live mosquito through the *extreme point of the labium.* After a few vigorous efforts they break through the integument at the point of the labium.

Note.—These experiments would tend to confirm Dutton's explanation of the escape of the filarial embryo. J. E. N.

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THE

Journal of Tropical Medicine

FEBRUARY 15, 1905.

LEPROSY IN CHINA.

MR. JONATHAN HUTCHINSON'S letter to the *Lancet* of December 24th, 1904, which we published on February 1st, 1905, will, it is to be hoped, elicit a response from some of the many capable observers in China. Mr. Hutchinson's request is to the effect that further investigation be made to test Mr. James Cantlie's statement as to the absence of leprosy "in the Peking district." Mr. Hutchinson himself supplies an explanation, as follows:—

My own explanation of the facts is ready and definite. North China is a dry, sandy district, abounding in salt, and producing little or no fish. South China has abundant fish and its salt is imported and taxed. The Chinaman can introduce leprosy wherever he goes if only he finds there plenty of fish. His success becomes assured if only there be a deficiency of salt. The agent by which he works is the fish, which he cures so badly.

There are now two questions to answer: (1)—Mr. Cantlie's statement as to the absence of leprosy in the northern provinces of China (except Shantung), including Manchuria; (2)—Mr. Hutchinson's statement that the badly cured fish of South China is in any way explanatory of the peculiar distribution of the disease in China. In his National Leprosy Fund prize essay, Mr. Cantlie states that during his travels in Chihli he did not see any lepers, and quoted Drs. Dudgeon, Marston, Frazer, Irwin, and Cheong, as severally maintaining that leprosy did not exist in Peking, Tientsin, nor anywhere in the Province of Chihli. Mr. Doolittle, in his report on social life of the Chinese, pp. 524-527, describes two large leper asylums he visited at *Tientsin*. It is now known, however, that Mr. Doolittle made a mistake, that he referred to Amoy, and not to Tientsin, where no leper hospital within the memory of man has ever existed. In reference to the absence of *salt* as a factor in the development of leprosy, Mr. Cantlie, in the essay referred to, writes as follows:—

Salt.—The absence of salt from the diet for any length of time is held to be a factor in the development of leprosy; and in India the rise and fall in price of rice is popularly believed to play a part in the appearance of the disease. The explanation of such a belief is easily enough interpreted. When any form of food is scarce, especially such an essential as salt, latent leprosy will speedily show itself; and persons, before they were deprived of the food in question, were perhaps never suspected of being lepers.

The two chief sources of salt in China are the salt wells in Sze-chuen, and the salt mills near Taku at the mouth of the Pei-ho River. The former may be considered the southern, and the latter the chief northern, source. Now at first sight it would seem as if there might be something in the theory, for are not Kwang-tung and Fokien maritime provinces far removed from the salt regions? On looking more carefully into it, however, cause and effect are not so pronouncedly linked. It is true the hot-bed of leprosy, namely, Kwang-tung (Canton) and Fokien provinces, are between 2,000 and 3,000 miles removed from the salt sources; and in the neighbourhood of the Pei-ho River, the district whence salt is exported to the provinces mentioned as most leprous, no leprosy exists. Further, there is a salt tax in China, which no doubt tends to make the people look upon salt as a luxury more or less. Sea carriage from even Taku, or far-away Sze-chuen by river, is a very cheap transit in China; and the salt tax is not so heavy as to deprive the fairly well-to-do of the article. That the poor classes may be stinted at times there can be no denying. On the other hand, consider the salt supply of Manchuria; the salt has to be carried from the Pei-ho near the sea-coast, first by boats up the river, and then on camels' backs many days journey beyond the Great Wall—an expensive and somewhat precarious source—yet there is no leprosy met with in Manchuria. The deprivation of salt cannot, therefore, be considered to hold good in China as a cause of leprosy; although the want of salt in the diet of leprous people will no doubt hasten the development of the symptoms of the disease.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE.

ON January 30th, Sir Alfred Jones, K.C.M.G., Chairman of the School, entertained at luncheon the members of the expedition recently returned from the West Coast of Africa. The guests on the occasion were Professor Boyce, F.R.S., Dr. Arthur Evans and

Dr. H. H. Clarke. Professor Boyce stated that vigorous anti-mosquito measures in Bathurst had resulted in marked improvement in the health of both Europeans and natives. At Freetown also improvement was noted, due probably to the removal of the living quarters from the seat of infection. Residents should be encouraged to sleep in those districts where mosquitoes least prevailed. At Conakry, a town in French territory, malaria seemed to be increasing, in spite of excellent general sanitary arrangements, simply because the authorities had neglected to do away with or shut up the old wells in the city in which mosquitoes bred.

Translation.

CONTRIBUTION TO QUININE PROPHYLAXIS IN THE TROPICS.

By Hans Ziemann.
State Surgeon, Naval Staff Surgeon.

Official Report.

(Reprinted from "Archiv für Schiffs und Tropen-Hygiene," vol. vii., 1904. *Abridged and translated from the German by* P. Falcke.)

In obedience to the request of the German Government, I forward the results of my enquiries respecting the prophylactic use of quinine in the case of 164 persons. Only twenty of these persons were not under my care.

As a great many patients had relapses, the number of which could not be ascertained, the number 164 does not cover the number of attacks of fever, so it is actually considerably higher.

Only those patients have been chosen for these enquiries who have spent long periods in the Tropics, and particular attention has also been directed to those persons in whom blackwater fever has set in as a complication of malaria, in order to determine the influence of prophylaxis and non-prophylaxis.

To me the attraction for the enquiry was the greater because at one time there was a great aversion to quinine prophylaxis along the entire West Coast of Africa, and I was the subject of the derision of the laymen on account of my continued agitation for the introduction of quinine prophylaxis, as well as in consequence of the strict prophylaxis I exacted amongst the crew on board H.M.S. "Hyena."

The results showed the striking necessity for such prophylaxis. In one year in which a kind of pandemic of malaria prevailed along the entire West Coast, and during which there was great mortality, we had only 23·5 per cent. of sickness, fresh cases, and 8·14 per cent. of relapses; there was not one single death and no case of premature despatch home. In former years there had been 350 per cent. relapses. On their return home every one looked healthy and hearty, although both the officers and crew of the "Hyena" had been exposed to unfavourable conditions on land, and the quarters on board were lamentably bad. The plan I adopted was to administer 1 gram quinine every four days; if a person had stayed on land for several days 1 gram was given every three days, and after an attack of fever a temporary strict increased prophylaxis was ordered. Relapses were the exception.

The material for this enquiry has not been sifted out, but is chosen as occasion directed. It comprises nearly all the officials in Duala who have been stationed there over six months.

It must be borne in mind that, even amongst those reckoned as "regular prophylactics," at least 30 per cent. or 40 per cent. did not take the quinine with absolute regularity.

In order to meet the requirements of personal idiosyncrasy, I apply various methods of administering quinine, both as regards dose and period:—

(1) Every five days, 0·5 gram quinine (A. Plehn).

(2) Every five days, 1·0 g., either in such a manner, the four days without quinine intervened, or the drug is taken one, five, ten, fifteen, &c.

(3) Every four days, 0·5 g. of quinine to be taken (or 0·5 g. euquinine in sensitive persons).

(4) Every four days, 1·0 g. of quinine; 1·0 g. of euquinine with bromide of potash to minimise the tinnitus aurium and trembling of the hands.

It may be accepted as a general rule that, after every attack of fever, a few germs remain in the body, which come to maturity after two to twenty-four hours, causing a fresh access of fever. For various reasons, it will be found that the same prophylaxis applied to avoid relapses is also best adapted to prevent new attacks, and therefore quinine every four or five days is taken. In addition, in order to avoid relapses after an actual attack of malaria, 1 g. of quinine must be taken on three consecutive days, and for another fortnight 1 g. is given every alternate day. This was the drastic prophylaxis already introduced by me in 1894, and which I then added to my general prophylaxis.

No quinine should be given to children under one year old. Until that age malarial infection must be guarded against by protecting the infants from the attacks of mosquitoes, a matter that requires the greatest care. Children of from 1 to 2 years of age are given 0·1 g. euquinine or quinine in chocolate, those from 2 to 3 years of age receive 0·2; the healthy appearance of the children of the Basel Mission families demonstrates that these doses are not too large. Older children need not be considered in this connection, as hardly any family remains longer than three years in West Africa, and the children are left at home when the parents return.

As to blackwater fever patients, the process of treatment is similar to that after an attack of malaria. As soon as the hæmoglobinuria and albuminuria have disappeared, 1 decigram of quinine (or euquinine if quinine is badly borne) is given; the urine is carefully watched, and the dose increased by a decigram a day until the dose formerly taken is safely attained. The maximum dose is then given for three consecutive days; for a fortnight it is given every other day, and then the habitual prophylaxis is resumed. If albuminuria, or a darker colour of the urine be again observed, the quinine should be at once suspended till the symptoms have disappeared, when the treatment is recommenced

with 0·1 quinine and continued as above. The practitioner who, like myself, has seen albuminuria set in after only 4 milligrams of quinine, and has observed blackwater fever after 5 milligrams to 1 centigram of the drug, is in a position to comprehend the extreme caution necessary in the administration of the drug.

We shall now consider:—

I. The results of prophylaxis or non-prophylaxis in relation to the frequency of attacks of malaria in general.

II. The results of prophylaxis or non-prophylaxis in relation to the frequency of (*a*) attacks of blackwater fever, (*b*) the cases of death from blackwater fever.

III. The general total results arrived at by means of this enquiry.

I.—*The Results of Prophylaxis and Non-prophylaxis in Relation to the Frequency of Attacks of Malaria in General.*

I can actually eschew the mention of cases of death in consequence of malaria. A modern tropical practitioner should have no such cases in uncomplicated malaria if timely and correct treatment are adopted. I had only three cases of death from malaria tropica. In the first case the patient had succumbed to malaria apoplectica before the arrival of the doctor. In the second case the patient was found to be dying from the same cause on the doctor's arrival. In the third case, complicated with nephritis, the patient was a feeble, elderly man, who, it may be noted, had never taken quinine prophylactically. *I cannot too strongly emphasise the fact that attacks of malaria are infinitely more severe in persons who have never or rarely taken quinine or have taken it irregularly than in those who have regularly employed the drug as a prophylactic.* If such a complication as blackwater fever sets in, those who have not taken quinine succumb to the intercurrent disease much more frequently than those who have taken it.

A.—Results in persons who have never adopted quinine prophylaxis. (Total 25.)

Amongst these there were some persons who would not take quinine "on principle," even when threatened with fever. According to R. Koch, immunity should have been attained by these. In reality most of these persons were very anæmic men with pronounced splenic tumours and high evening temperatures. In one of these cases quinine carefully administered warded off blackwater fever, from which the man had once suffered before he took quinine. In this case the minutest doses of quinine were given, and the dose gradually increased, till the condition improved materially, and the patient was sent home.

Of these 25 persons, 24=93 per cent., suffered frequently and severely from fever. One apparently had no fever, but looked miserably ill, and evidently, according to accounts, had suffered from latent fever; 9 died=36 per cent.; 8 invalided home=32 per cent; 3, who took quinine only when they had fever, are healthy=12 per cent.

There is no need to enlarge on these figures, which prove that without prophylaxis 100 per cent. of the white population in Cameroon would run the risk of being attacked with fever.

B.—Results in persons who took quinine irregularly as a prophylactic. (Total 70.)

Amongst these are comprised those who from the start took quinine irregularly, or at first took none, and later on took it regularly or irregularly, or finally those who took it regularly at first, next irregularly, and finally took none.

Results.—Of 70 persons taking quinine irregularly, 47 are now healthy=67·14 per cent. (of the non-prophylactics only=12 per cent.); 1=1·43 per cent. remained free from malaria. In 26 cases=37·14 per cent., the introduction of a regular or increased prophylaxis caused the fever to cease entirely. In 21 cases=30 per cent., the fever decreased considerably. Thus in 47 cases=67·14 per cent., improvement or relative recovery after the introduction of regular prophylaxis. In 8 cases=11·43 per cent., the fever increased, and the general condition became worse after the cessation of the prophylaxis.

Six cases=8·57 per cent. (non-prophylactics=37 per cent.), died of blackwater fever; these at first took no quinine, and afterwards only took it irregularly; 6=8·57 per cent. (in the non-prophylactic=32 per cent.), invalided home in consequence of blackwater fever or chronic malaria.

Thus 20=28·57 per cent., prematurely died or were sent home (of non-prophylactics=68 per cent).

Perhaps these results are still more instructive than those relating to the regular prophylactics or to those who took no quinine at all, as the relinquishment of the prophylaxis is almost always accompanied by increased fevers, and partly by complications such as blackwater fever. The commencement of increased or regular prophylaxis promptly brings about a remarkable decrease of fever.

It is only in isolated cases when the quinine has been taken irregularly, or only at times, that the chronic malaria does not cease when the regular or increased prophylaxis has been adopted.

C.—Results in regular prophylactics and those who have always practised it. (Total 69.)

Of 69 regular prophylactics, 11 were never ill=16 per cent. (of the 70 irregular prophylactics only 1 was healthy = 1·43 per cent.; of the 15 non-prophylactics, all were ill.)

16 = 23·2 per cent. of the regular prophylactics only suffered from slight fever.

17 = 24·64 per cent. lost the fever entirely after the introduction of a still more drastic prophylaxis added to the regular prophylaxis; the increase being either in regard to period or dose, as the case might be.

5 = 7·25 per cent. became much less subject to fever after the introduction of a more drastic regular prophylaxis.

62 = 89·87 per cent. remained healthy and capable of service in the Tropics (of the irregular prophylactics, only 67·14 per cent.; of the non-prophylactics, only 12 per cent.).

3 = 4·35 per cent. died of blackwater fever (of irregular prophylactics, 8·57 per cent.; of non-prophylactics, 36 per cent.).

2 = 2·89 per cent. were invalided home in conse-

quence of blackwater fever (of irregular prophylactics, 0·57 per cent.; of non-prophylactics, 32 per cent.); 2 = 2·89 per cent. look pale and languid.

II.—*Results in Prophylaxis or Non-prophylaxis in Blackwater Fever.*

It may be mentioned that ten persons who came under treatment for blackwater fever cannot be included in this report, as through some mischance their history of disease was lost. Had it been otherwise, the material would have been larger. However, my 62 cases are sufficient for the purpose.

(*a*) Results in non-prophylactics amongst blackwater fever patients:—

(1) 14 blackwater fever patients of the 15 who did not take quinine prophylactically suffered from malaria preceding the attacks of blackwater fever.

(2) These 15 patients had a total of 35 attacks, the average being thus 2·33 attacks to each.

(3) 7 = 46·66 per cent. died.

(4) 5 = 33·33 per cent. were invalided home. Of the three remaining the ultimate history is unknown.

Of the 7 who died, 2 did not succumb direct to blackwater fever, 1 dying of a subsequent pleuritis, and the others of hepatic abscess.

(*b*) Results in irregular prophylactics amongst blackwater fever patients:—

(1) The 35 blackwater fever patients who had taken quinine irregularly all had attacks of malaria, more or less frequent, before the first access of blackwater fever.

(2) These 35 men had between them 83 attacks of blackwater fever, making an average of 2·37 attacks each. (This number almost corresponds with the number 2·33 of the non-prophylactics.)

(3) 19 = 54·3 per cent. are healthy and capable of service in the Tropics (of the non-prophylactics almost all are sick or dead).

(4) 6 = 17·14 per cent. died from blackwater fever (of the non-prophylactics, 46·66 per cent. died).

(5) 5 = 14·29 per cent. were invalided home.

(6) The half-gram prophylaxis had no distinct influence on the origin of blackwater fever in this group of patients. First of all, they had all either taken quinine irregularly from the start, or not at all at first, and then regularly or *vice versa*. In 16 cases, 0·5 or 0·6 had been taken about every four, five or six, seven or eight days, irregularly. In other cases sometimes 0·5, sometimes 0·8 or 1·0, had been taken every five days, or at more distant intervals. In one case blackwater fever had set in during a period in which 1·0 had been taken every ninth and tenth day. In one case blackwater fever set in before the introduction of any prophylaxis whatever; in two other cases, during furlough after discontinuation of the prophylaxis.

C.—Results in regular prophylactics amongst blackwater fever patients.

(1) Of 12 blackwater fever patients who had regularly taken quinine all had suffered from malaria more or less frequently before the first attack of blackwater fever.

These 12 patients numbered 19 attacks between them, this being an average of 1·5 attacks each, as compared with 2·33 in the non-prophylactics and 2·37 in the irregulars. In 2 patients who habitually took 0·5 quinine every five days the single attack each had was very slight.

(2) 8=66·66 per cent. recovered, and were capable of service in the Tropics (of the irregular prophylactics only 54·3 per cent., in the non-prophylactics none).

(3) 3=25 per cent. died (of the irregular prophylactics 17·14 per cent., of the non-prophylactics 46·66 per cent.).

(4) 1=8·33 per cent. were sent home (of the irregular prophylactics 14·29 per cent., of the non-prophylactics 33·33 per cent.).

(5) This group also does not afford a correct standard from which to defend the half-gram prophylaxis. Of the 12 regular prophylactics, 6 had presumably taken 0·5 quinine every five days, 3 had taken 0·5 for a time and 1·0 for a time. One had taken 0·5 every Wednesday and Saturday; one had taken first 0·5 every fifth day, and afterwards 1·0 every seventh and eighth day; one patient was exceedingly regular, having at first taken 1·0 every ninth and tenth day, and then every fourth and fifth day; one man was attacked with blackwater fever during the 1 g. prophylaxis: and one only developed an attack during his furlough, when he interrupted his regular prophylaxis; 8 patients were attacked with blackwater fever during a period when they were taking 0·5 quinine every five days.

III.—*The General Total Results Arrived at by Means of this Enquiry.*

The two tables require no comment; even in the one showing blackwater fever cases the results of regular prophylaxis are clearly observed. Particular attention may, however, be directed to the following points:—

(1) In a fraction of the cases—*i.e.*, in 16 per cent. of the regular prophylactics—the outbreak of fever was avoided, whereas only one was saved of the irregular prophylactics, and none of the non-prophylactics escaped.

(2) In a percentage of 23·2 regular prophylactics there was only one attack of very slight fever; in another 24·64 per cent. of regular prophylactics, the attacks of fever disappeared entirely on the introduction of a more drastic prophylaxis.

(3) That the large proportion of 89·87 per cent. of the total regular prophylactics remained capable of service in the Tropics, that 67·14 per cent. of the irregulars remained fit for service, and only 12 per cent. of the non-prophylactics were in good health.

(4) That attacks of fever were slighter and of shorter duration in the regular prophylactics.

(5) That regular prophylactics had infinitely better standing as regards sickness and death.

Even these results will doubtless become still more favourable when more drastic prophylaxis has gained a more general footing, though it must be noted that quinine alone affords no absolute protection.

* * * * *

The author, during his experiments in Victoria in 1900, was frequently bitten by Anopheles artificially

SELECTIONS FROM COLONIAL MEDICAL REPORTS.

No. 3.

CEYLON.

Medical Report on the Health and Sanitary Condition of the Island for the Year ending December 31st, 1903, with the Hospital Returns for the same Period.

By Sir ALLAN PERRY, M.D., D.P.H.

I.—Population: Birth and Death-rates.

The estimated population of the Island on December 31st, 1903, was 3,740,562 (exclusive of the military and shipping population); 148,027 births and 96,084 deaths were registered. The birth-rate was 40·0 per mille against 38·5, and the death-rate 25·9 per mille against 27·5, in the previous year, calculated on the estimated population at the middle of the year.

II.—Public Health.

The public health during the past year has been good. There have been very few outbreaks of epidemic disease, and the numbers attacked for each of the more serious infectious diseases have been less than in 1902 (with the exception of enteric fever), *vide* Table I. :—

Table I.

	Cholera		Small-pox		Malaria		Enteric Fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1902 ..	179	116	146	35	6,513	115	243	63
1903 ..	46	23	29	5	4,766	108	358	71

Enteric Fever.—The increase in the number of enteric fever cases is, I doubt, not a real one; at the same time it must be remembered that the notification of these cases is becoming more general, and the bacteriological aid in diagnosis is more used by medical practitioners. In December an amended regulation for the notification of this disease was promulgated, which should still further increase the numbers notified. The number of cases of this disease treated in the several hospitals was 358, with 71 deaths, a death-rate of 19·83 per cent. The General Hospital, Colombo, returned the largest number of cases, viz., 212, with 36 deaths, a death-rate percentage of 16·98. Some of these cases were admitted to the hospital from ships. In the jails there were 26 cases of enteric fever, with 4 deaths, a death-rate of 15·38 per cent. The cause of the increase may be put down to contaminated water, for as long as cesspits and wells in close proximity to them exist, cases will increase in numbers.

Cholera.—It is satisfactory to note the small number of cases of cholera. This comparative freedom may be attributed to the closure of the North road coolie route, and to the quarantining of coolies at Ragama. The total number of cases was 46, with 23 deaths. The cases occurred in the Western, Central, and North-Central Provinces. The infection in nearly every instance could be traced to India.

The subjoined table shows the Provinces in which outbreaks occurred, the number attacked, the number of those who died, with their nationality :—

Table II.

Province	Number of Cases and Deaths		Nationality													
			Sinhalese		Moors		Tamils		Malays		Immigrants		Others		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Western ..	1	1	—	—	—	—	—	—	—	—	1	1	—	—	1	1
Central ..	7	5	—	—	—	—	—	—	—	—	7	5	—	—	7	5
N.-Central	38	17	—	—	38	17	—	—	—	—	—	—	—	—	38	17
Total ..	46	23	—	—	38	17	—	—	—	—	8	6	—	—	46	23

Malaria.[1]—There has also been a marked falling off in the admission in the hospitals for malaria, but the deaths from the disease are half per cent. higher for 1903 than for the year previous.

Small-pox.—There were 29 cases of small-pox, with 5 deaths; they occurred in the Western, Central and North-western Provinces. Three cases came from Indian ports, 3 from Singapore, 7 from Colombo city, the others from out-stations and estates. Of the 29 cases, 7 were unvaccinated, 21 vaccinated, and 1 re-vaccinated. Of the deaths, 4 were unvaccinated and 1 vaccinated.

Chicken-pox.—There were 1,862 cases, with 4 deaths, reported. Most of these cases were treated in their own homes.

[1] Please see remarks on this disease under the heading, "Meteorological Condition and its Relationship to Disease."

Measles.—This disease did not assume any alarming proportions in any of the towns or villages.

Dysentery.—There were 2,384 admissions for this disease in the hospitals. The Western, Central and Sabaragamuwa Provinces were responsible for the largest numbers. The Eastern and North-Central Provinces had the fewest cases. The deaths in hospitals from this disease were 658, a percentage death-rate of 27·6. In the jails, 636 cases were admitted, with 20 deaths, a percentage death-rate of 3·14. The jails in the Colombo district contributed 445 out of the total jail admissions for this disease. December and January are the worst months for dysentery, and the reason of this, in my opinion, is due to the comparatively cold nights producing chills. Cholera belts and flannel shirts have been recommended for prisoners during this season. The above figures are instructive, as showing the much smaller death-rate in those who, like prisoners, are treated early. There is an order in the jails that any prisoner using a latrine more than twice in twenty-four hours must be seen by a medical officer.

Leprosy.—The total number of cases reported during the year was 589, against 560 in 1902, being an increase of 29 cases. The following is a return of lepers treated at hospitals and dispensaries, excepting those who were treated at Hendala and Kulmunai:—

TABLE III.

	1902.	1903.
Western Province	32	10
Central Province	28	27
Northern Province	9	1
Southern Province	29	17
Eastern Province	6	26
North-western Province	—	1
North Central Province	—	1
Province of Uva	4	—
Province of Sabaragamuwa	10	28
Total	148	111

Four hundred and forty-seven cases were treated in the Leper Asylum, Hendala, and 31 in the Kalmunai wards. The new cases were admitted from the following places to the asylum at Hendala:—

Western Province	38
North-Central Province	1
Southern Province	16
Province of Uva	3
Province of Sabaragamuwa	10
Total	68

The Western Province, which includes the Colombo district, shows the largest number of cases. The Leper Ordinance has been in force two years. One hundred and twenty cases were reported during 1903 and 113 in 1902. Many have been accommodated in the asylum, and some have been isolated in their own homes, where conditions existed which allowed this.

There are 207 known lepers throughout the Island, whose names and addresses are registered, and who are periodically examined. They are in the non-contagious stage of the disease, and there is no room at present for them in the leper institutions. The approximate leper population may be put down at about 616.

A considerable increase in the accommodation for lepers will have to be made at Hendala, if they are all to be segregated. The extension of the female section is urgently required; this can be done by appropriating male ward 1 for females. Three new male wards to contain 50 beds each are also badly required, but more accommodation still will be required if all cases have to be isolated. The acquisition of more land for building purposes has quite recently been made. There are no punishment cells at Hendala; a few are required.

Kalmunai Leper Wards.—At this institution 31 lepers were treated during the year, of whom 18 were discharged relieved, 4 died, and 9 remained under treatment at the end of the year.

Ankylostomiasis.—This disease is constantly introduced from India by Malabar coolies, and is spread owing to their careless habits. This disease is on the increase. There were 1,775 admissions in all hospitals, with 272 deaths. The largest number was treated in the General Hospital, Colombo, viz., 756 admissions, with 38 deaths. A large number of cases occur in the planting districts. The danger of the disease exists in the profound anæmia, which so lowers the vitality that the victim is carried off by practically any intercurrent complaint. Improved sanitation is the principal means by which this disease may be combated. Proper latrines and the proper disposal of human excreta, if introduced into the planting districts, would check the waste of labour from this disease. Although only 1,775 cases were admitted into the hospitals, there are hundreds of coolies with this disease on them doing their daily work, and daily spreading the disease to others by fouling the soil and water-courses. It is a matter of impossibility to provide accommodation for all these cases in the hospitals, but much could be done on estates in the way of treatment.

Parangi.—This is essentially a disease of poverty. Whether it is a variety of syphilis or not, the fact remains that the better-nourished people of this Island do not suffer from it. As food becomes more easily obtainable by the extension of irrigation, and as sanitary methods become more generally known, this disease will show a marked decrease. The death-rate is remarkably small; out of 3,254 admissions for this disease during the year there were only 11 deaths.

Malignant Diseases.—There were 237 cases reported for the year, made up of 222 cases of "cancer" and 15 of "sarcoma."

Plague.—The same precautions against plague were continued during the year as have been in use for several years past. The Plague Committee has had fortnightly meetings. Plague hospitals at remote stations are not now kept up, but sites are ready and building materials at hand in case of necessity. On March 5th, 1903, a case of plague was landed from s.s. "Maria Valerie" at the Southern Plague Hospital, Galle; the patient was discharged cured on April 29th, 1903. The contacts were segregated and placed in quarantine for the full period of ten days.

Galle continues to be the plague port. The buildings at the plague hospital and the segregation camp are

fully equipped and ready for use at a moment's notice. A new disinfecting depôt has been established on the foreshore, where coolies who work on ships in quarantine can be disinfected, and where there is a steam disinfecting machine for the disinfection of soiled clothes. Accommodation is also provided for the disinfection of male and female saloon passengers.

The destruction of rats at the ports of Colombo and Galle was carried out during the year, with fumigation of cargo boats.

TABLE IV.—*Comparative Statement of Principal Diseases for the last Five Years.*

Year.	Cases.	Deaths.	Year.	Cases.	Deaths.
	Cholera.			*Enteric Fever.*	
1899	—	—	1899	170	61
1900	814	456	1900	224	77
1901	152	97	1901	202	74
1902	179	116	1902	243	63
1903	46	23	1903	358	71
	Small-pox.			*Leprosy.*	
1899	334	56	1899	506	53
1900	252	42	1900	635	43
1901	390	75	1901	518	56
1902	146	35	1902	483	48
1903	29	5	1903	526	92
	Chicken-pox.			*Ankylostomiasis.*	
1899	1,211	1	1899	1,255	234
1900	935	—	1900	1,336	273
1901	1,762	6	1901	1,691	326
1902	2,293	3	1902	1,609	257
1903	1,862	4	1903	1,775	272
	Measles.			*Parangi.*	
1899	29	1	1899	3,080	10
1900	23	—	1900	3,646	9
1901	44	—	1901	3,117	12
1902	196	2	1902	3,434	10
1903	20	—	1903	3,254	11
	Dysentery.			*Malarial Fever.*	
1899	2,639	930	1899	8,305	607
1900	3,204	934	1900	6,226	147
1901	4,177	1,543	1901	5,665	89
1902	3,017	999	1902	6,513	115
1903	2,384	658	1903	4,766	108

Table V. gives figures for 1902 and 1903 for comparison:—

TABLE V.—*Table showing the Primary and Revaccination in the Island during* 1902 and 1903.

	1902.	1903.
Primary vaccination:—		
Number vaccinated	142,141	146,428
Successful	121,273	126,538
Unsuccessful	9,382	11,008
Unknown	11,486	8,882
Revaccination:—		
Number vaccinated	7,760	4,510
Successful	4,652	3,013
Unsuccessful	1,500	799
Unknown	1,608	698
Primary vaccination:— Percentage of successful to total inspected	92·81	91·99
Revaccination:— Percentage of successful to total inspected	75·61	79·03

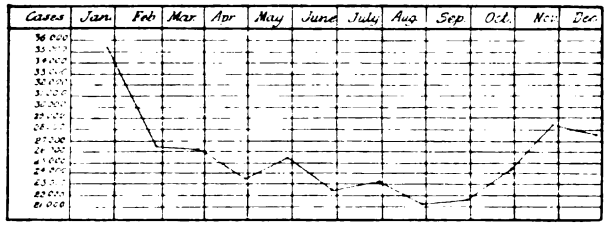
Vaccination.—During the year 150,938 subjects were vaccinated: 146,428 were primary vaccinations, and 4,510 revaccinations. Of the former, 126,538 were successful and 11,008 unsuccessful, and in 8,882 subjects the result of the operation was not known, as they failed to present themselves for examination on the appointed days. The percentage of successful cases to total inspected was 91·99. Of the revaccinations, 3,013 were successful and 799 unsuccessful, and the result was not known in 698 cases, as the subjects failed to present themselves for inspection. The percentage of successful cases to total inspected was 79·03. The Central Calf Vaccine Depôt at Colombo was opened on August 11th, and glycerinated calf lymph was supplied in sufficient quantities to all parts of the Island. The other depôts were closed during the year. The inhabitants of the Island are well protected against small-pox, and to this cause is due the prevention of the spread of this disease from the various foci that existed during the year.

III.—METEOROLOGICAL CONDITION AND ITS RELATIONSHIP TO DISEASE.

For the purposes of this report it has been thought advisable to roughly divide the Island into eastern and western portions. The eastern contains the districts affected by the north-east monsoon and the western by the south-west monsoon. The figures show the total number of cases of disease, number of cases of malaria and of dysentery, and the rainfall of the districts.

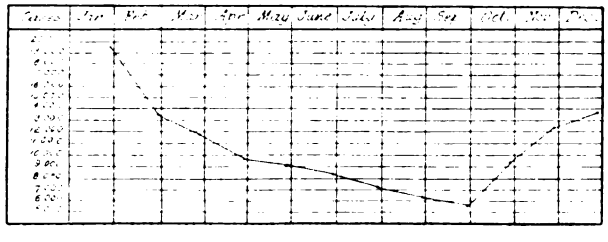
(*a*) *The Malaria in the East.*—Chart I. shows the

Chart I. *Total Diseases in the East, 1903.*



curve of total disease in the eastern portion of Ceylon. It will be noticed that it is similar to the curves of previous year. Highest in January and having a slight rise in May, it begins its proper rise in October.

Chart II. *Malaria in the East, 1903.*



The malarial curve, Chart II., shows that malaria is the disease which mainly produces the fluctuations in the curve of general disease in this part of Ceylon; it is not responsible for the rise in May, and Chart III. shows that dysentery is the cause of this rise.

Chart IV.—The rainfall is quite different from preceding years, in which it has always risen to a maximum in November, while in this year its maximum is December. This alteration in the rainfall has altered

the December rise of malaria, and hence has altered the total disease curve in a way not shown in previous years. The sudden rise in December of the rain curve is associated with a slowing of the rise of the malaria curve, and even a fall of the total disease.

Chart III. *Dysentery in the East, 1903.*

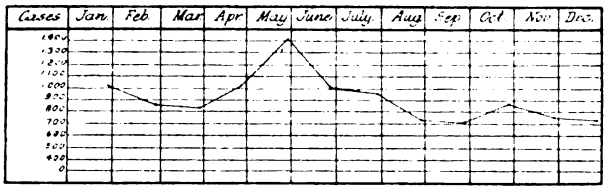


Chart IV. *Rainfall in the East, 1903.*

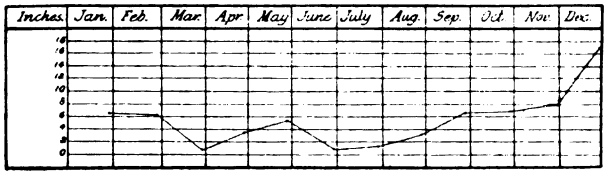
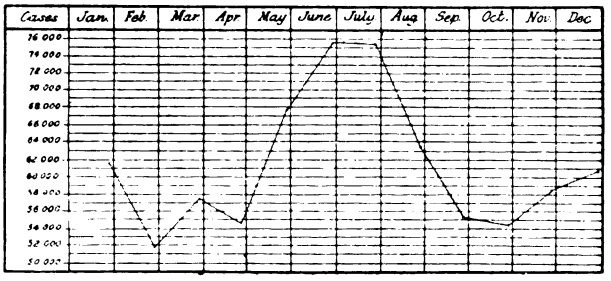


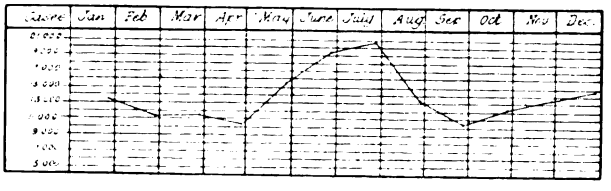
Chart V. *Total Diseases in the West, 1903.*



(*b*) *The Malaria in the West.*—Chart V. shows the total disease curve in the west, and is different from the previous years in having a large rise in June and July.

The rise is shown by Chart VI. (the malarial curve

Chart VI. *Malaria in the West, 1903.*



in the west) to be caused principally by malaria. This rise commences in May and reaches its maximum in June for total disease and in July for malaria. In causing this rise malaria is assisted by dysentery (Curve VII.), which commences its rise earlier, reaches its maximum in May, and falls through June without affecting the total disease curve because the malarial increase is marked, but its July fall causes a slight fall of the total disease curve, although the malarial curve continues to rise. Generally January is the great malarial month, and this is not so in 1903. The general malarial rise in 1903 is during and after the May rainfall, and the other rise is in November and December, after the October rainfall.

Chart VII. *Dysentery in the West, 1903.*

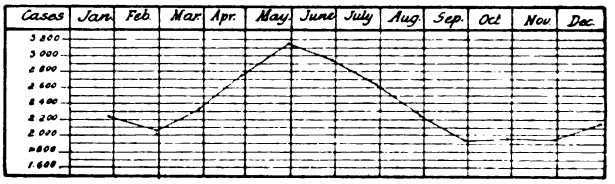
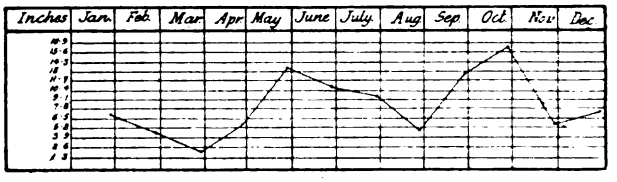


Chart VIII. *Rainfall in the West, 1903.*



General Remarks.

It will thus be seen that in the eastern portion of the Island, affected by only the north-east rainfall, the malarial curve is related to the rainfall, and produces a powerful effect upon the general disease curve. The relationship to the rainfall is that the malarial curve, rising through October, November and December, reaches its maximum in January. This, I am sure, is related to the development of the Anopheles, for December and January are the great months for mosquitoes and January for malaria. The mosquitoes developing and increasing in number during and after the rain, spread the infection.

The relationship in the west is not so clear, as the influence of the two monsoons exists. Still, generally speaking, January represents the north-east influence, and May or June the south-west with regard to malaria.

IV.—General Sanitary Condition of the Colony and of the Chief Towns.

The general sanitary condition of the Island remains in much the same condition as last year. The same methods of disposal of sewage and refuse exist, and, though by no means satisfactory, are still far from bad when compared with other tropical countries. The water supply is often very good, and steps are being taken every year to remedy defects.

Colombo.—This city has had its sanitary staff considerably augmented recently. There are two specially qualified Medical Officers of Health, with a staff of Inspectors, in the employment of the Municipality. The disposal of sewage is the same as it has been for some years past, viz., the collection of solid matters for burial at various depôts, and the continuance of cesspits; the latter are being gradually filled up and closed. Colombo has contributed the largest number of cases of enteric fever, and in most cases the origin of the disease has been traced to contaminated water or milk.

The scavenging of the town is defective. Road sweepings and refuse are deposited over grass-fields

immediately outside the residential quarter; these harbour flies, which most likely carry infection. A proper cinerator or a series of cinerators should be erected by the Municipality for the destruction of all sweepings and refuse, and the heat generated should be available as a motive power for electric lighting. The dust in Colombo is a nuisance and a danger; there is too little watering and sweeping of the streets and of the collection and removal of the dust.

A beginning has been made towards introducing a water carriage system for sewage on Mr. Mansergh's scheme. The water supply of Colombo is deficient, but this is in process of being remedied. On the whole, Colombo is healthy for a tropical city. Much is being done in the way of improved sanitary measures, but a great deal is still required: *e.g.*, the question of overcrowding, the removal of insanitary areas, surface drains, and cesspits.

The Colombo lake is a perennial source of anxiety, it is practically a receptacle for sewage, and during drought its level falls a good deal, exposing offensive muddy sides. It is also the breeding ground for myriads of small irritating flies. My idea is that it should be drained, and the area converted into an open space.

The notification of infectious diseases has been more satisfactory during the past year.

Kandy.—The general sanitary state of Kandy leaves considerable room for improvement. Several cases of enteric fever occurred in the town from insanitary causes. The drainage is imperfect. An improved scheme of drainage, it is reported, is under consideration. The water supply is sufficient and of good quality. The conservancy of the town has been improved, but several cesspits remain. Alleys are ill-ventilated, insanitary, and overcrowded.

Jaffna.—Jaffna is the only town in the Northern Province where sanitation is carried on to some extent, but even here a good deal of improvement is required. As it is the chief town of an important, populous, and rich Province, it should possess a local board or municipality.

Water for all purposes is obtained chiefly from wells, but the majority of them contain hard, brackish water, unfit for drinking. The water supply of Jaffna is most unsatisfactory, but a special public works department officer is at the present time surveying and making estimates for a better supply. I have not had any of the details sent to me.

Galle.—This town is in a fairly sanitary condition, the Fort especially showing considerable improvement after the closing of cesspits and the introduction of the dry-earth system in private houses. In the other divisions of the municipality much remains to be done in this direction. The water supply of the town is very defective.

Batticaloa.—The sanitary condition of Batticaloa is fairly satisfactory, but there is much room for improvement. A better system of drainage is required, but owing to the nature of the land, which is flat, this is a matter of some difficulty. The compounds should be kept cleaner, and swamps and marshy grounds drained and filled up. The water supply, which is drawn from wells, is ample, but some of the wells in the dry season are apt to fail.

Kurunegala.—The sanitary condition is not satisfactory. A water supply and drainage scheme are badly wanted: the latter and public markets will be taken in hand by the Local Board soon.

Anuradhapura.—The principal town of the North-Central Province formerly had a reputation for unhealthiness, but of recent years, owing to improved sanitary measures, the health of the inhabitants has wonderfully improved.

Badulla.—The water service is satisfactory. The drainage is defective. The scavenging was satisfactorily done. Public latrine accommodation is deficient.

Ratnapura.—The sanitary condition is not satisfactory. The drainage has not been improved. The water supply is said to be satisfactory.

V.—Medico-Legal.

Medico-Legal Duties.—During the year 1903, 230 analyses were conducted, of which 122 were judicial, 23 were samples of kerosine oil, 6 were samples of fuel oil, and 38 were samples of water, spirits, eau-de-cologne, arrack, cinnamon, oil, &c., from His Majesty's Customs, Local Boards, and the Railway Department, and 41 were samples of water conducted at the request of the Government. Of the 122 judicial analyses, 72 were undertaken for the detection of poisons and 50 for examination of stains. In the poisoning cases arsenic was detected in 5, arsenic and croton oil in 1, croton oil in 1, lead in 1, mercury in 4, copper in 1, magenta in 1, ammonia in 1, canabis indica in 13, opium in 4, opium and ganja in 1, atropine in 1, alcohol in 1, niyangala (*Gloriosa superba*) in 1, and in the rest of the analyses no poisons were detected.

A synopsis of the analyses for the year in a tabular form is herewith annexed:—

Synopsis of the Analyses for 1903.

Total, 230 Fees, Rs.1,837·50	Judicial	122	50 Mammal blood	29
			50 Spermatozoa	4
			50 No blood or seminal fluid	17
			72 Arsenic	5
			72 Arsenic and croton oil	1
			72 Croton oil	1
			72 Lead	1
			72 Mercury	4
			72 Copper	1
			72 Magenta	1
			72 Ammonia	1
			72 Canabis indica	13
			72 Opium	4
			72 Opium and ganja	1
			72 Atropine	1
			72 Alcohol	1
			72 Niyangala (*Gloriosa superba*)	1
			72 No poisons	36
				122
	Kerosine oil			23
	Fuel oil			6
	Water, spirits, eau-de-cologne, arrack, cinnamon oil, from His Majesty's Customs, Local Boards, and the Railway Department			38
	Analyses for Government purposes			41
			Total	230

VI.—Administrative Hospitals and Asylums.

The Government medical institutions are, as a rule, well built, either of stone or of brick, and contain large, airy wards, with plenty of cubic space and superficial area. The general type of hospital is an administration block in front with wards running at right angles to it, connected by covered corridors. The buildings consist of a ground floor only, and they occupy a good deal of space. The roofs are of red tiles, and the floors of cement concrete. The beds are of wood with cane bottoms, or of iron with copper spring mattresses; bedside tables are provided, and the fittings and equipment are serviceable, and, in some of the institutions, fairly up to date. All the hospitals have separate accommodation for women, and at many of them there are isolation wards.

In many of the hospitals there is no operating room. This defect is being attended to, and in some there are no residential quarters for the medical staff, nor accommodation for nurses. It is my object to improve the quality of the surgical instruments, and to gradually introduce modern appliances and aseptic furniture. A large number of good operating tables have been made locally and distributed to many of the institutions.

There is the great want in Colombo of a modern infectious diseases hospital. The present establishment consists of a series of cadjan huts, which have been yearly patched up since they were originally erected over twenty years ago. Their only advantage is that for sanitary reasons, when necessary, they can be destroyed by fire without much loss of money, for it is quite impossible to disinfect them, and their rough interior walls are most unsuitable for infectious wards from a hygienic point of view. I hope in the near future that a permanent hospital for infectious diseases on the pavilion plan, and with accommodation for paying patients, will be provided.

Native Attendants.—Male and female ward attendants are employed in the hospitals, who work under the directions of the nurses; they perform their duties fairly satisfactorily, but it would be well if a better class of attendant could be induced to take up the work, as many of those now employed are very ignorant and quite illiterate.

Nursing in Ceylon Hospitals.—The nursing in the Ceylon hospitals is not entirely satisfactory. Some of the out-station hospitals have no nurses; other hospitals are under-nursed. The question of improving this service is now under the consideration of Government. The nursing staff consists of—

4 European qualified nurses.
23 European Roman Catholic Sisters (untrained).
3 European Anglican Sisters (untrained).
1 European matron (untrained).
27 matrons (trained locally).
45 nurses (trained locally).

Three of the European qualified nurses are employed in the paying section of the General Hospital, Colombo. The fourth is the matron of the Lady Havelock Hospital. Two more European qualified nurses are expected in 1904. The Roman Catholic Sisters perform nursing duties in the general wards of the Colombo hospital and at Kurunegala. The Anglican Sisters are employed at the Kandy Hospital.

Two nursing schools for the training of young women exist at the Lady Havelock Hospital and the Kandy Hospital. The length of the course is two years, after which a certificate of proficiency is given to those who pass a satisfactory examination.

During the year 1903, 66 hospitals and asylums were in operation. The Immigrant Hospital at Puliyadirakkam was closed on December 31st, 1902, and the one at Pesalai was closed on March 1st, 1903. The lock hospital at Mahaiyawa was closed on December 31st, 1903. The Civil Hospital at Mulhalkele was closed in December, 1902, and was reopened in June, 1903, for the fever season.

Numbers Treated.—In the 32 Civil Hospitals, including the Lying-in Home, there were 40,553 cases treated, with 3,433 deaths, being 3,420 cases and 265 deaths less than in the previous year. The daily average sick was 1,553·53, as against 1,652·51 in the previous year. In the eight Field Hospitals there were 4,105 cases treated, with 129 deaths, against 4,426 treated and 171 deaths during the previous year. The daily average sick was 179·59, against 179·46 in 1902. The number treated in the four immigrant hospitals was 1,318, against 1,855 in 1902; the deaths numbered 63, against 84 in the previous year. The daily average sick was 60·71, against 73·49 in 1902. In the twenty District Hospitals 13,081 cases were treated, against 14,928 in 1902. There were 1,859 deaths, against 2,510 in the preceding year. The daily average sick was 750·19, against 792·41 in 1902.

Surgical Operations.—At the various hospitals throughout the Island 2,172 operations were performed, with 72 deaths. The following is a summary of the operative work:—

	Cases.	Deaths.
Amputations:—		
Upper extremities	80	1
Lower extremities	27	2
Operations for cataract	73	—
Iridectomy	20	—
Radical cure for hernia	35	1
Radical cure for hydrocele	98	—
Hepatic abscess	36	12
Trephining of skull	30	2
Lithotomy, supra-pubic	6	1
Lithotomy, perineal	1	—
Laparotomy	17	7
Ovariotomy	11	3
Cæsarian section	1	—
Other eye operations	63	—
Other operations	1,674	43
Grand total	2,172	72

General Hospital, Colombo.—The total number of patients treated at this institution during the year was 14,606, with 1,138 deaths, against 16,035 cases and 1,101 deaths in the previous year. Of the total treated, 455 remained from the previous year and 14,151 were new admissions; 13,047 were discharged, and there remained 421 under treatment at the end of the year. The daily average sick was 486·82, and the percentage of deaths to total treated was 7·79. The institution consists of twenty-five wards and eight solitary rooms, and the number of beds is 425. An administration block, with quarters for the medical and nursing staff, is in course of construction, and will, when completed,

improve to a considerable extent the usefulness of the institution.

Paying Section, General Hospital, Colombo.—This consists of the wards "Planters'" (4 wards with 4 beds), "Anthonisz" (2 wards with 2 beds), "Passengers'" (8 wards with 8 beds), "Seamen's" (3 wards with 26 beds), "Clerical" (1 ward with 2 beds), and "Cargill's" (2 wards with 2 beds). The total number of patients treated in these wards during 1903 was 523, with 55 deaths, against 577 cases and 41 deaths in 1902. Of the total treated, 16 remained from the previous year and 507 were new admissions; 448 were discharged, and there remained 20 under treatment at the end of the year. The daily average sick was 26·34, against 27·61 in 1902, and the percentage of deaths to total treated was 10·51, against 7·11 in 1902.

Houses of Observation for Suspected Lunatics.—There are four institutions of this nature at Colombo, Kandy, Galle, and Jaffna, and into the first three were admitted for observation 323 patients, which, with 20 remaining from the previous year, made a total of 343, of whom 78 were transferred to the asylum at Colombo, 252 were discharged, 3 died, and 10 remained at the end of the year. There were no admissions to the House of Observation at Jaffna.

Lunatic Asylum, Colombo.—At the beginning of the year there remained 316 males and 167 females, total 483 cases. During 1903, 151 cases (103 males and 48 females) were admitted, the total number under treatment being 634 (419 males and 215 females). Of these, 49 males and 26 females, 75 in all, were discharged, and 39 males and 12 females, 51 in all, died.

The daily average was 488·37 (males 317·34, females 171·03), an increase of 6·92 as compared with the previous maximum average. This increase affects only the male division, which was already overcrowded.

The institution consists of 18 dormitories, 20 day-rooms and corridors used as day-rooms, and 134 single rooms. The water supply is drawn from the Labugama reservoir, which supplies the town. The quality is good. The Superintendent (Dr. J. B. Spence) complains of the inadequate supply of water; it is hoped that with the duplication of the main from Labugama this complaint will cease. There are 19 lavatories, 17 baths, and 19 latrines. The dry-earth system is carefully carried out. The number of patients secluded under lock and key was 8, and the number of times seclusion was resorted to was 190, and the longest duration in any single instance was six hours. There was one case of accidental injury to a patient by an attendant, another case of serious injury by a patient to another patient; other cases of injury have been rather unusually numerous, some being accidental in origin and others being due to the action of fellow-patients. No case of suicide occurred during the year. Such patients as are well enough are given daily exercise, while others are confined to the airing courts. Outdoor sports (cricket and tennis), as well as indoor games (cards, bagatelle, musical instruments, &c.), are provided. A gramophone was purchased last year from industrial funds. A library is in existence, and those who can read are regularly supplied with books and papers, but it has not been availed of to any large extent. The inmates of the Asylum are employed in gardening, trade, housework, &c, and the proceeds of their industry is formed into a fund, which at the end of the year amounted to Rs. 18,900·40.

The Lunatic Asylum has reached the limit of its accommodation, overcrowding is constant, and the question of providing more buildings is a pressing one.

Leper Asylum, Hendala.—The Leper Asylum received 136 patients for treatment during the year, which, with 311 remaining from the previous year, made the total 447. The daily average in the Asylum was 290·83. Of the total treated, 75 left, of whom 48 absconded and were reported to Government Agent and Police, and subsequently arrested and brought back to the Asylum. Nine lepers were discharged and permitted home isolation, subject to the regulations framed under the Leper Ordinance. One Tamil immigrant was sent back to his village in South India. There were 83 deaths, giving a percentage of 18·56 to total treated. Two hundred and eighty-nine cases remained under treatment at the end of the year.

De Soysa Lying-in Home.—The total number of patients treated at this institution during the year was 818, against 737 in 1902, 499 in 1901, and 163 in 1890. Of these, 775 were discharged cured, 2 removed by relatives, 5 transferred to the General Hospital, 17 died, and 19 were remaining under treatment at the end of the year. The daily average sick was 18·52. The percentage of deaths to total treated was 2·12, against 1·25 in 1902, ·80 in 1901, and 3·08 in 1890. The popularity of the institution is daily increasing, specially with the Mohammedan patients, whose admissions are increasing year by year. The increase of this caste from 20 in 1902 to 32 in 1903 is a substantial one.

The following operations were performed during the year:—

Class.	Division.	Subdivision.		
Forceps	Difficult	Brow	3	
		Head	115	
	Complex	Twins	4	
		Prolapse of cord	4	
	Preternatural Compound	Head and hand	10	136
Version, podalic	Complex	Placenta prævia	6	
		Transverse	14	
	Premature birth	Small head	4	24
Craniotomy	Difficult	Hydrocephalus (head)		3
Evacuation of uterus	Abortion	Removal of placenta and ovum		20
Separation and removal of placenta	Complex	Morbidly adherent placenta		10
Acceleration of labour by water bags	Complex	Placenta prævia		6
Abdominal section and Baer's operation				1
Puerperal eclampsia				6
		Total		206

In the Lying-in Home 23 pupil midwives receives training in 1903, of whom 17 obtained certificated

after passing a satisfactory examination. A scheme to train selected pupils from all provinces has been adopted, and it is hoped that it will be the means of introducing European midwifery into the villages.

Lady Havelock Hospital.—In this institution 1,137 patients were treated, against 1,072 in 1903. Thirty-one remained from the previous year, and 1,106 were new admissions. The daily average sick was 34·06. Nine hundred and ninety-four patients were discharged. There were 111 deaths, and 32 remained under treatment at the end of the year. Of the 1,137 patients, 351 were children (124 boys and 227 girls). There were 49 operations performed, with 3 deaths. The number of cases of diseases peculiar to women was 164, as compared with 147 in 1902. The total number of Mohammedans was 83. There were 12 paying patients, as compared with 10 in 1902. Of these, 6 were Europeans, 2 Burghers, 1 Tamil, 2 Sinhalese, and 1 American.

Police Hospital, Colombo.—Eight hundred and forty-five patients were treated in the Police Hospital, of whom 838 were discharged after treatment, 1 died, and 6 remained at the end of the year. The daily average sick was 13·35. At the outdoor dispensary of this hospital 2,200 persons were treated during the year, who paid 2,469 visits.

Grenier Eye, Ear, and Throat Infirmary.—At this institution 6,602 cases were treated during the year, against 4,927 in the previous year. The contributions during the year amounted to Rs. 126·20, and were of a purely voluntary nature.

Branch Hospitals.—Colombo, Kandy, and Galle are provided with a special hospital for the treatment of women suffering from venereal diseases. The total number of new cases admitted was 289, which with 18 remaining from the previous year make a total of 307, against 371 in 1902. Of these, 290 were discharged, 2 died, and 15 remained at the end of the year. Of the 307 females in the three Branch Hospitals, 30 were treated for primary syphilis, 53 for secondary syphilis, 72 for tertiary syphilis, 4 for inherited syphilis, 113 for gonorrhœa, and the rest for other diseases, the result of venereal poison. The patients seek voluntary admission.

Jail Hospitals and Sick Prisoners.—The number of prisoners admitted to the different jails in the Island was 13,797. The average daily strength of prisoners was 2,784. The number treated in the jail hospitals during the year was 4,396, against 5,363 in the previous year. The total deaths numbered 73, against 117 in 1902.

RETURN OF DISEASES IN JAIL HOSPITALS FOR 1903.

Diarrhœa	Cases	850
	Deaths	7
Malarial fever	Cases	796
	Deaths	3
Enteric fever	Cases	26
	Deaths	4
Other fevers	Cases	34
	Deaths	—
Injuries	Cases	219
	Deaths	—
Leprosy	Cases	2
	Deaths	—

The following table gives the number of admissions, number of deaths, average strength, death-rate to admission to hospitals, and to average strength for the past four years :—

Year	Admissions to Hospitals	Number of Deaths	Average Strength of Prisoners	Death-rate to Admissions	Death-rate per 1,000 of Average Strength
1900	4,465	102	2,515·14	2·28	40·55
1901	4,638	112	2,752·71	2·41	40·69
1902	5,363	117	2,656·40	2·18	44·05
1903	4,396	73	2,784·00	1·66	26·21

Kanatta Infectious Diseases Hospital. — At this institution 11 cases of infectious diseases remained from the previous year, and 316 were admissions, making a total of 327. Of these, 303 were discharged cured, 4 died, and 20 remained. The death-rate was 8·50 per cent., against 8·77 per cent. in 1902. Of the 327 patients, 14 were treated for small-pox, 203 for chicken-pox, 89 for measles, 5 for whooping cough, 15 for mumps, and 1 was under observation for cholera. Of the 14 cases of small-pox, 2 died. There were no admissions into the segregation hospital at Borella.

The following two institutions are not entirely supported by, but receive a large subsidy from, the Government :—

(1) *The Friend-in-Need Society's Hospital at Jaffna.*—The Friend-in-Need Society's Hospital at Jaffna received 2,094 patients, which with 73 remaining from the previous year made a total of 2,167. Of these, 2,020 were discharged, 85 died, and 62 patients remained at the end of the year. At the outdoor dispensary of this institution 10,575 persons were treated during the year, who paid 20,328 visits.

(2) *The Victoria Home for Incurables, Colombo.*—The statement of admissions and deaths is annexed :—

Disease	Number Remaining on December 31, 1902	Yearly Total, 1903		Total Cases Treated	Remaining at the End of December, 1903
		Admissions	Deaths		
Paralysis	36	8	3	44	41
Congenital deformity	1	—	—	1	1
Leucoderma	1	—	—	1	1
Epilepsy	2	—	—	2	2
Elephantiasis	1	—	—	1	1
Optic atrophy	1	—	—	1	1
Asthma	2	—	—	2	2
Fracture	1	—	—	1	1
Accident	1	—	—	1	1
Lupus	1	—	—	1	1
Phthisis	—	1	—	1	—
Cancer	—	1	1	1	1
Chronic rheumatism	3	—	2	3	1
Total	50	10	6	60	54

(*To be continued in next Journal.*)

Table of all Cases Observed.

Total of all cases observed	Number	Persons remaining free from malaria		Persons remaining capable of service in the Tropics		Deaths from blackwater fever and other consecutive diseases		Invalided home in consequence of disease		Attacked with blackwater fever		Died from blackwater fever alone	
		Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.
Non-prophylactics ..	25	0	0·0	3	12	9	36	8	32	15	60	7	28
Irregular prophylactics ..	70	1	1·43	47	67·14	6	8·57	6	8·57	35	50	6	8·57
Regular prophylatics ..	69	11	16	62	89·8	3	4·35	2	2·89	12	17·4	3	4·35
Total ..	164	12	7·32	112	68·3	18	10·97	17	10·36	62	57·8	16	9·76

Table of Blackwater Fever Cases only.

Blackwater fever patients	Number	Blackwater fever preceded by attacks of malaria		Total number of attacks of blackwater fever		Capable of continuing service in the Tropics		Deaths from blackwater fever alone		Invalided home		Further history unknown	
		Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.
Non-prophylactics ..	15	very many	—	35	2·33	0 (?)	0 (?)	7	46·66	5	33·33	3	20·
Irregular prophylactics ..	35	many	—	83	2·37	19	54·3	6	17·14	5	14·29	5	14·28
Regular prophylactics ..	12	a number	—	19	1·5	8	66·66	3	25·0	1	8·33	—	..
Total ..	62	—	—	137	2·2	27	41·93	16	25·8	11	17·74	8	12·9

infected; he nevertheless never suffered from malaria, he always took 1 g. quinine every four days, and when working in malarious swamps took it still oftener. He, however, does not consider this fact to be an indisputable proof of the absolute efficacy of the quinine prophylaxis. This drug, however, cannot be too highly prized in the fight against malaria. Its efficacy has been strikingly demonstrated in many cases in one of the worst malarial districts in the world. The ideal requisition with which to encounter malaria is, and always will be, the combination of all the remedies furnished by modern tropical hygiene. Malaria amidst the fluctuating population of West Africa cannot possibly be combated by quininisation alone. What can be done is constantly to issue teachings on the being, treatment, and prevention of malaria to all the whites and to the intelligent blacks. The pupils in the advanced classes in schools should be instructed in hygiene as applied to dwellings and clothing, food and drink. All swamps should be drained, a sanitary brigade organised to pour saprol (?) into all the pools. The author has opened the campaign in West Africa by these means. It is interesting to observe how more and more clean native dwellings are being erected, with windows that admit light and air, and afford no shelter to the Anopheles.

The vanity of the Negroes, who, whenever possible, endeavour to do the same as the whites, may be advantageously used for their good. We must not forget that the fight against malaria is also a question of money.

It will be a matter of patience, however, to force malaria more and more into the background, as it has been with alcoholism here in Duala, this vice being one of the worst enemies of the European in the Tropics.

PURULENT PERITONITIS PERFORANS AND ASCARIS LUMBRICOIDES IN A NEGRO.

Translated by P. Falcke.

Dr. Hans Ziemann (*Archiv für Schiffs und Tropen-Hygiene*, 1905, vol. ix.) reports the following interesting case: During the author's tenure of office in Cameroon a dying negro boy was brought to him. He was informed that the lad had always enjoyed good health, and until the previous day had had a good appetite. Only four hours previous to his admission he had been taken with severe abdominal pains, which caused him to twist and squirm; he also had several attacks of vomiting. Dr. Ziemann examined the lad immediately on his admission to hospital. He was a powerfully-built boy of about 12; temp. 38·9° C.; pulse accelerated and weak, 140 per minute; abdomen tense, distended and very sensitive. Death supervened after only a few minutes, and an obduction was at once performed, showing a fresh purulent fibrinous exudation in the abdominal cavity. The loops of the intestines adhered to one another and were injected. Two large *Ascaris lumbricoides* and some fæcal matter were found between the loops of the small intestines, and a careful examination revealed two circular smooth

holes corresponding in size to the worms in the walls of the small intestine in the middle part of the ileum. The intestines, on being opened, were found to contain an incredible number of ascarides along the entire course, but which were most numerous in the ileum. It was impossible to compute the number of worms, but they filled four measures of one litre each. There was no trace of ulceration either in the vicinity of the holes or elsewhere. The whole of the mucous membrane of the intestine, however, was hyperæmic. The author is of opinion that in this case the holes were caused by the boring of the worms, and that the escape of the fæces into the abdominal cavity set up the purulent and exceedingly acute peritonitis. The author states that he has never heard of a similar case in the Tropics. The "Kroo" Negroes, of which this lad was a member, are of a suspicious and revengeful nature, and attributed the lad's sudden illness to an attempt of some enemy to poison him. The obduction which his friends permitted dispelled this illusion, and probably prevented subsequent unmerited vengeance being wreaked on some suspected person.

Notes and News.

MEDICAL VISIT TO PARIS.—A party of British medical men have been invited to pay a visit to Paris on May 11th to visit the hospitals and other medical institutions in that city. Sir William Broadbent is the chairman of the London Committee, and applications to join the party may be forwarded to him.

H.R.H. PRINCESS CHRISTIAN has been made Honorary President of the Liverpool School of Tropical Medicine.

MESSRS. BURROUGHS, WELLCOME AND CO. have been given a Grand Prix—the highest award—at the Cape Town International Industrial Exhibition for the pharmaceutical and other products exhibited by them.

New Drugs.

HISTOGENOL, "HALMÉ," an organic arsenio-phosphoreted compound, is recommended in the treatment of phthisis and wasting diseases generally. The drug is presented in three pharmaceutical forms: emulsion, granulated form, and as bulbs.

Remedies.

INSECT BITES.—After applying aromatic spirit of ammonia freely to the bitten part, apply a lotion of liq. plumbi subacetatis and tincture of opium āā ʒ ss. to ʒ viii. distilled water.

INTESTINAL FERMENTATION. — Bismuth salicylat.; benzonaphthol, sodii benzoatii, āā 45 gm.; syrup simpl. ʒ v., and aquæ ad ʒ iv. One teaspoonful every three or four hours.—Dr. F. GROSSE, *Medical Review of Reviews*.

Medical News.

THE PLASMŒBA OF DENGUE. — Eberle, H. A., a U.S. Army surgeon engaged in the Philippines, states that he has discovered the cause of dengue to be a parasite belonging to the sporozoa, occurring in the blood plasma. Eberle describes the parasite as occupying the cells, producing a pale violet-tinted growth of various shapes. Spore formations occur, occupying usually two-thirds of the entire corpuscle. Spores from pseudopodia, which project beyond the border of the corpuscle, pushing out the elastic limiting membrane of the cell, and finally burst into the plasma. There is much in the description which requires the acceptation of this discovery with extreme caution.

DR. A. LINGARD, Imperial bacteriologist at the Muktesar Laboratory, India, has isued a valuable report on the preparation of rinderpest protective serum.

The Destruction of Mosquitoes.

IN a letter to the Editor of the West India Committee Circular, C. K. Gibbons remarks: In your allusion to the pamphlet by Major W. M. Hodder, R.E., you say "the fact that Barbados, although it has swamps and the mosquitoes might be imported, is free from the *Anopheles* and also malarial fever, leads the writer to say that if the reason for this could be discovered, a much more simple and efficacious means of destroying the insect would be at hand than the costly and laborious method of drainage, clearing, and other works." I have no doubt that the swamps and ponds in Barbados are kept free from mosquitoes by a small fish that abounds in them. They are very small, a full-grown female being about one and a quarter inches long and the male about three-quarters of an inch, but exist in such shoals that they are known locally as "millions." As a child I have often kept them in an aquarium, and found out that their favourite food was the larvæ of the mosquito, on which I used to feed them, and I now always keep them in my water tanks in Barbados, which without them would team with the larvæ of the local mosquito, which variety, though it does not spread malarial fever, has other objectionable habits. These interesting little fish are viviparous, and the male is most gallant to his mate, circling round her and bending his tail backwards and forwards, no doubt with the object of showing off his brilliant markings of red, green, gold, and black, which she does not possess. The natural enemies of the "million" are the golding—every pond has its solitary fisher—and the voracious larvæ of the dragon-fly. I suggest that the "million" be imported in the malarial swamps in the other West Indian islands and Demerara, where they may meet with enemies too numerous to allow them to increase, but the experiment is worth the trial.

ABBAZIA, a seaside resort on the east coast of Istria, is well spoken of as a winter resort. Sea-bathing in the Adriatic and the walks in the surrounding hills are the special attractions.

THE annual dinner of the Cairo School of Medicine was held on January 26th. The occasion was rendered of additional interest by the fact that Dr. Symmers, who has long been connected with the School, was presented with a handsome silver bowl by his colleagues on the occasion of his leaving Cairo to take up the duties of Professor of Pathology in the Queen's University, Belfast. Mr. Reginald Harrison, who was travelling through Cairo, was also present at the dinner, and advocated a closer connection between the School of Medicine in Cairo and educational and licensing bodies in Britain.

THE CULTIVATION OF LIQUORICE IN MESOPOTOMIA.—Major Newmarch, British Consul-General at Baghdad, in a despatch to the Foreign Office, gives interesting particulars of the liquorice industry in Mesopotamia. The *Glycyrrhiza glabra* plant, from which liquorice is obtained, grows at various places on the banks of the Tigris and Euphrates Rivers. The plant attains usually a height of from 4 to 5 ft., but in very favourable soil it may grow from 8 to 10 ft. high. It thrives best in moist lands near rivers, and prefers a rich soil. The root of the plant is cured and pressed into bales for export. Some 5,000 persons are employed in the industry, and about 10,000 tons are exported annually, the average value being about £5 per ton. Winter, when the leaves have fallen and the plant is resting or "down," is the period during which the root yields the best liquorice.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"The Liverpool Medico-Chirurgical Journal," January, 1905.

The Treatment of Some Cases of Malarial Fever. By Wm. Carter, M.D.

Carter strongly advocates Warburg's tincture in cases of recurring malarial fever.

"British Medical Journal," February 4, 1905.

1. A Case of Trypanosomiasis. By W. I. Taylor and John Currie, p. 248.

2. Mode of Infection of Human Tick Fever. Letter, p. 280.

(1) Taylor and Currie describe a case of trypanosomiasis which they observed in the Colonial Hospital, Lagos. The patient, aged 32, was a native of Ibadan, a large town 120 miles inland. In 1901 he went to Calabar, where he served as a policeman. He reached the hospital on November 7th, 1904, when he presented a staggering gait, a stupid mental condition, and responded to questions in a childish manner.

He was in a fairly well-nourished condition; the breath smelt fetid, but his respiratory, circulatory and digestive functions were normal; the liver was slightly enlarged, and the spleen markedly so; the skin showed no rash, nor were the lymphatic glands markedly enlarged; his nervous system showed neither ataxy nor loss of co-ordination of muscles; knee-jerk and toe (flexor) reflexes somewhat exaggerated; no ankle clonus; sensation normal; no muscular wasting. Thirty-seven days after admission (December 15th) the patient was drowsy, but easily waked; face puffy and expressionless; cervical glands distinctly enlarged; a circular patch of scaly eruption on the left side of the neck; no fever. The examination of the blood on November 10th showed trypanosomes in peripheral blood, 4 to the film. *Filaria perstans* present. Blood count gave: Red corpuscles, 2,530,000 per c.mm.; slight poikilocytosis; white corpuscles, 6,000 per c.mm.; lymphocytes, 36·8 per cent.; mononuclears, 11·2 per cent.; eosinophiles, 8·4 per cent.; hæmoglobin, 32 per cent. On November 16th lumbar puncture was performed, but no trypanosomes found. Punctures of the spleen and liver gave films in which occurred bodies resembling those described by Rose, Bradford and Plummer as occurring in cases of *Trypanosoma brucei*. On December 16th no trypanosomes found in finger blood, but *Filaria diurna* and *F. perstans* present. On December 31st cerebro-spinal fluid showed trypanosomes. The absence of fever in this case is notable. It should be mentioned also that sleeping sickness is not endemic in Lagos.

(2) Major Ross mentions that a telegram from Drs. Dutton and Todd, who are engaged in research work in the Congo Free State, has been received announcing that "Spirilla cause human tick fever; naturally infected ornithodorous infect monkey."

"Medical Record," December 24, 1904.

The Antitoxin Troatment of Tertian Malarial Infections. By JOSEPH H. FORD.

The chief purpose of these investigations was the discovery of an agent which, when injected, will confer temporary or permanent immunity. Certainly, the discovery of a specific antitoxin is a long step in that direction, and Ford has reason to hope that we here possess the key which will unlock the Tropics. The animals employed in these experiments were rabbits, the domestic white rabbits being most suitable for the purpose. The rabbits were inoculated by the intravenous injection of human blood, in which the *Plasmodium malariæ* had been found, and by the bites of *Anopheles maculipennis* and *A. punctipennis*.

Experiment 1.—The first case of malaria which I sought to cure by antitoxin treatment received 0·75 gm. of serum obtained from a brown rabbit. This was injected subcutaneously twenty-three hours before the expected chill. The fever, however, recurred.

Experiment 2.—Defibrinated blood, 1·50 grammes, was injected subcutaneously into a patient suffering from benign double tertian malaria. Fever recurred.

Experiment 3.—Defibrinated blood, 2 grammes, was given at one injection; fever recurred, but when a second injection of 1½ grammes was injected the fever disappeared permanently.

Experiment 4.—Defibrinated blood, 1½ grammes, and the same quantity repeated, fever disappeared.

Experiment 5.—The same quantities and the same results obtained as in Experiment 4.

Experiment 6.—Desiccated erythrocytes and serum

pulverised and kept for use in sterile tubes were tried, 1½ grammes pulverised and desiccated red blood corpuscles were suspended in 5 grammes of isotonic salt solution. An abscess developed at seat of injection which caused an elevation of temperature; when the abscess was relieved all feverish symptoms disappeared.

Experiment 7.—One gramme of desiccated erythrocytes suspended in 4 grammes normal salt solution gave same results as in Experiment 6, the malarial parasites disappearing from the blood.

Experiment 8.—Desiccated serum ½ gramme in solution 4½ grammes of serum; no effect.

Experiment 9.—Desiccated serum 0·75 grammes in 4 grains sterile water were injected hypodermically; no parasites were found in the blood after the third day.

Dr. Ford concludes that desiccated erythrocytes, containing the malarial antitoxin, will find their chief usefulness in injections given to confer immunity, and it is possible that we will find the corresponding serum, in much larger doses, more suitable for curative purposes.

"Medical Record," January 21st, 1905.

1. A Contribution to the Etiology of Malaria, and to the Analysis of Some Relations of Meteorology to Chemical Pathology. By H. Wakefield, M.D.

2. The Use of Sulphate of Copper Alone, and in Combination with Lime, for the Destruction of Mosquito Larvæ, as a Deodorant, and as a Disinfectant. By A. H. Doty, M.D.

(1) Wakefield states that the purpose of this paper is a protest against these undue excesses of speculative conclusion which, like all fads, are the consequence of an unwarranted drift of opinion, and are unworthy of a scientific profession. The following fragmentary collation on malaria is humbly submitted as a nucleus of evidence in behalf of my contention that malaria is a syndrome, more typical in symptomatology than in the incidental blood change, or in a specific mode of infection. Moreover, that it is essentially a disease of general stasis of catabolism, involving primarily blood destruction, and is, in different cases, caused by the suboxidation of humid, vitiated atmospheres, &c., by toxicity, of many mosquito bites, by intravascular bacterial toxins, and undoubtedly, also, by direct inhalation of atmospheres heavily impregnated with decaying organic matter, which is absorbed by the blood circulating through the pulmonary alveoli. The symptologic syndrome of the disease is essentially one of subcatabolism, and is largely due to some form of vitiated air; the newly discovered factors, the *plasmodium* and the mosquito, should be relegated to the subordinate position of contributory factors, instead of adopting the absurd and confusing custom of revising our conceptions of a disease *per se*, whenever a new factor is proved or accepted as bearing an etiologic relation, which, owing to ignorance of underlying etiologic actions, we have been unable to reconcile to our preconceptions of the resulting syndrome.

(2) Doty experimented with three solutions in his endeavour to ascertain the best means of destroying mosquito larvæ, and of disinfecting and deodorising foul water in tanks. The solutions were: Sulphate of copper, 1 lb. to 10 gallons water; lime, 1lb. to 10 gallons water; sulphate of copper and lime, of each 1 lb. to 10 gallons water.

He finds the mixture of lime and sulphate of copper more effective than when either are used alone. The mixture has no toxic effect on the larva, but kills them by rapidly removing from the water the organic matter upon which the larvæ live.

"Indian Medical Gazette," December, 1904.

1. Further Notes on the Treatment of Leprosy by Injections of Leprolin. By E. R. Rost, Capt. I.M.S.

2. A Short Account of the Various Trypanosomata Found to Date in India in the Blood of some of the Lower Animals and Fish. By A. Lingard, M.B.

3. The Paternal *versus* the Common-sense Plague Policy. By W. G. King, Lt.-Col. I.M.S., C.I.E.

4. Plague in Ferozepore in 1904. By L. B. Scott, Lt. I.M.S.

5. Guaiaquin: A Remedy suggested for Piroplasmosis, Kala-azar, and other Allied Fevers. By M. C. Nanjunda Row, M.B.

6. Case of Elephantasis of the Penis. By H. Innes, Capt. I.M.S.

7. The Lathyrism Inquiry: Editorial.

8. Anti-malarial Sanitation in India. Editorial.

9. Burning Foot, or Erythromelagia Tropica: Note.

10. Animals and Plague Infection: Note.

11. The Tyrol as a Health Resort for Anglo-Indians: Note.

12. Successful Use of Solution of Adrenalin Chloride in Plague and Asthma. By T. Bahadurji.

13. Surgical Procedure in Liver Abscess. By W. Huntly, M.D.

(1) Rost prepares a solid extract of beef: he uses one ounce of beef dissolved in two oz. water and soaked in pumice stone, previously cleaned and dried, placed in bottles inside the autoclave. One ounce of this extract will give 2,000 cc. of nutrient fluid, on which the acid-fast bacteria grows readily, and the leprosy bacillus gives a culture capable of reducing to leprolin in from six to eight weeks in this medium.

The best way of making a nutrient solid medium for growing the bacillus of leprosy is to dialyse the agar cut into thin strips by merely allowing them to soak, in frequently changed distilled water, for from two to three weeks, at the end of which time the agar is melted and tested for chlorine. At the same time the nutrient broth is dialysed through parchment paper for a similar length of time, and when all traces of chlorine are absent, the two are mixed together, and the solid nutrient medium made.

Rost cultivated the bacillus of leprosy from the cotton shirt of a leper, and even when strips of the shirt were hung in distilled water the bacilli were found after one month in the water in easily recognisable quantities. If cotton-wool is added to the medium in flasks, and the cultivation examined in about one month, the bacilli will be found in groups inside the cotton fibres. Rost considers this very important, as it shows a possible means of contracting the disease, especially as we know the bacillus will grow in distilled water, and so a shirt soaked in the rain and kept damp on the body, if already infected, could easily be a source of infection to

the wearer, especially if he should have some small abrasion, such as a prickly heat scratch.

Leprolin has been tried in Burma, where fourteen cases of leprosy are reported to have been cured by the treatment.

Rost has himself given 1,000 injections in Rangoon and Mandalay with no bad constitutional effects, and in nearly all the cases has improvement resulted.

The return of sensation to anæsthetic parts of the skin by the use of the injection has been most marked and wonderfully speedy, justifying the belief that the action of leprolin is not an auto-antitoxic, but an antitoxic agency.

The dose of leprolin, and the interval at which it should be injected, varies; the difficulty in producing a leprolin of constant strength makes it imperative to increase the dose if it is not found to cause a reactionary fever of over 100° F.

The injections were made chiefly in the buttock or the back, and the dose varied from 10 m. to 60 m., and might be given on successive days for as many as six times, but cures were effective after two or three doses only.

Rost reports fourteen cases as completely cured.

(2) Lingard, Imperial Bacteriologist to the Government of India, gives an account of eight trypanosomes met with in India. (1) *Trypanosoma Lewisi*, discovered in 1877 by T. Lewis in rats. (2) *T. Evansi*, discovered in 1880 in equines, mules, and camels by Griffith Evans. (3) Giant Trypanosoma of bovines, discovered by A. Lingard in 1892. (4) Trypanosoma of fish, described by A. Lingard in 1891-93. (5) *Trypanosoma bandicotti*, discovered in the blood of *Mus giganteus* in 1893 and in bandicoots. (6) Trypanosoma of Plains bovines, discovered by A. Lingard in bullocks in 1895. (7) Trypanosoma of hill cattle, discovered by A. Lingard in 1902. (8) *Trypanosoma equiperdum*, discovered by Pease in 1902.

(3) King contributes an excellent criticism upon a series of articles which have lately appeared in the *Pioneer* by "Red Cap," who advocates a "common-sense policy" of treatment for plague. "Red Cap" trusts to the people's common-sense coming to their rescue when they have been bitterly punished as a result of their ignorance. The principle appears to be, "let plague have full play until necessity compels the suffering community to take steps for its amelioration." No period is assigned for the termination of these "educational measures." Meantime the people die.

King remarks that experience will show that the common-sense policy of uncontrolled plague is a very expensive luxury for a community to indulge in if they depend upon trade for their living, or for a Government if its existence depends upon finances derived from taxation. Plague cannot be got rid of by pursuing the policy of the ostrich. It is a disagreeable matter that must be tackled, and the sooner and more completely it is met on correctly organised lines the better for the financial welfare of India. Prejudices and conservatism not only of the people of the country but also of many highly educated members of the European community will delay the consummation, and many futile compromises will accordingly be attempted by the various local governments; but it takes no gift of prophecy to foretell that ultimately the necessity for the formation of a properly organised and equipped permanent public health service for India which shall grapple with preventible diseases must be recognised.

(4) Scott concludes from observations of plague in India that the muridæ are the sole definitive hosts of plague, and that their offices as hosts, but those of no other animal, are essential to the survival of plague in nature; its ability to infect the bodies of man and other animals being due to an accidental resemblance of their bloods to that of the muridæ in the absence of some plague-resisting element.

Furthermore, plague is probably dependent almost entirely upon the *domestic* muridæ, in whose conditions of life dirt and darkness favour the survival of infection for long periods in their homes outside the animal body, and crowding, permit of rapid spread of infection from individual to individual.

Hence, apart from the offices of host, man is manifestly of much importance in the existence of plague, in that the domestic rat and mouse depend on him for their existence, and in that he acts as the chief transporter of infection to fresh communities of muridæ along lines of human travel in contaminated articles and otherwise.

Prevention of Plague.

If this view of plague be correct, the following corollaries as to prevention need no proof:—

(i.) *Precautions Against Human Infection.*—Live in a house free of rats and mice and one which will not preserve infection in floors, &c., should it gain admission. When plague has entered a house or village, flee from infected houses and diseased rats and mice, and shun all objects which may have come in contact with them.

Before reoccupation be sure that there are no more diseased rats and mice, and that houses, &c., are disinfected by unroofing or otherwise.

(ii.) *Suppression of the Disease.*—This resolves itself into prevention of spread, since, if confined to small localities, plague must die out from want of fresh hosts. Segregation of human contacts and isolation of human patients can be of no more use towards checking plague than they would be towards checking anthrax. As just explained, they may prevent the occasional production of adventitious virulence of plague towards man.

Inoculation, too, can (in my opinion) be of no use as a suppressive measure when applied to man. Anthrax inoculation, though very successful in producing immunity, is not applied to man, but to cattle. For this purpose plague inoculation should be similarly applied to rats and mice. We might as well hope to suppress small-pox by vaccinating cows as to suppress plague by inoculating man.

Disinfection or absolute exclusion of articles coming from rat-infected places is of the greatest importance. Seeing that a human case may start rat plague in a fresh locality, quarantine of man and detention of plague-stricken travellers have some importance.

The essential measures are those applied to rats and mice. The chief must be wholesale destruction, since it is difficult to see how sanitation can be applied to these animals beyond so far as possible preventing

the access to them of imported infection: Japanese experience aids this conclusion, as in four Japanese cities in which plague had prevailed for years, a short application of a general destruction of rats arrested the disease.

(5) Row, M. C. Nanjunda, has been trying guaiaquin, a compound of guaiacol and quinine, in some cases of malarial cachexia (piroplasmosis). The dose of the drug was usually 4 grains four times daily. Row reports favourably of the drug in many cases.

(6) Innes removed the hypertrophy tissues from the genitals of a Hindu male patient, aged 26, at Bhagalpar Hospital. The penis was markedly in a state of elephantiasis, whilst the scrotum was in the state of lymph scrotum merely. The man had a hard chancre two years previously. No blood examination was obtained.

(7) The inquiry into the prevalence of lathyrism in the Central Provinces, which was determined upon in 1903, has just been reported upon. Andrew Buchanan, M.D., Major I.M.S., was entrusted with the inquiry. The report confirms the opinion that the vetch, *Lathyrus sativus*, termed *Teora* in the Central Provinces and *Kesari* in Northern India, is the cause of the disease. Previous reports are referred to: Sleeman's *Rambles and Recollections* in 1833, in the United Provinces; Kirke's account of the disease in Sinde in 1845; Irving's report in the *Annals of Indian Medical Science* in 1857. To cause lathyrism the grain of the lathyrus must be consumed for two or three months consecutively. The scarcity of wheat in the districts of the Central Provinces, where the disease prevailed, lasted from 1896 to 1902, and in the five districts, Hoshangahad, Narsingpur, Jubbulpore, Damoh and Saugar, chiefly affected, 7,492 persons were attacked, 5,775 being males, 759 females, and 958 children.

The cultivation of the lathyrus was prohibited in Europe in 1671, and in Algeria and at Allahabad during the latter part of the nineteenth century. In the Central Provinces of India, however, the grain of lathyrus is not only allowed to be issued to cattle, but also to farm servants. The wisdom of issuing the grain even to cattle is doubted by the editor of the *Indian Medical Gazette*, for in a footnote he suggests that the disease in horses known locally as kumri or "gone in the loins" may be due to the consumption of lathyrus grain.

(8) The failure of the Mian Mir measures against malaria which were discussed at the meeting of the British Medical Association at Oxford, in July, 1904, is the subject of an editorial in the *Indian Medical Gazette*. The causes of the failure are summed up as follows: (1) The antimalarial measures at Mian Mir were attempted on a scale inadequate to the magnitude of the evil. (2) It was a mistake to treat only one portion of the cantonment, as the whole station is one, and is subject to the same influences. (3) Irrigation is a necessity. What is wanted is an inquiry into the distance at which irrigation can be allowed in the neighbourhood of all cantonments and civil stations without detriment to the public health.

"Le Caducée," February 4th, 1905.

Médecine sanitaire maritime; Prophylaxie et traitement de la Fièvre Jaune (Maritime Sanitary Medicine; Prophylaxis and Treatment of Yellow Fever). By Dr. J. Dupuy, of Saint-Nazaire.

These are briefly some of the prophylactic measures to be enforced against yellow fever, as ordered by the special regulations drawn up by the Sanitary Convention of the Eastern States of South America.

I.—Maritime Prophylaxis.

Ships infected with yellow fever will be treated as follows:—

A. Ships calling at other Brazilian ports.

(*a*) The sick to be at once disembarked and isolated under suitable mosquito nets.

(*b*) The systematic destruction of mosquitoes to be carried out throughout the entire ship.

(*c*) Passengers disembarking at the port will receive a passport and will remain under sanitary supervision for thirteen days.

(*d*) The ship will then be allowed to clear, on taking on board a maritime sanitary inspector who will accompany the ship as far as the last Brazilian port. His duties are: (1) To make a daily inspection of the passengers and crew, at once isolating under a mosquito net any person showing feverish symptoms; (2) should he see any mosquitoes a fresh destruction is to be carried out.

B. Ships not calling at other Brazilian ports.

The instructions noted under *a*, *b* and *c*, as above, will be carried out.

C. Precautions against yellow fever on board the ship itself.

(*a*) Protection of the ship at anchor against the invasion of mosquitoes.

(1) Posting up in the crews' quarters a notice about the transmission of yellow fever and of malaria by mosquitoes.

(2) The issue of a mosquito net to each of the crew.

(3) The issue to those on watch at night of thick gloves and gauze veils for the protection of their hands and faces.

(4) Protection of all on board by inserting in all openings, port-holes and internal doorways, movable frame-work with metal trellis-work.

(*b*) Extermination of mosquitoes on board. This is to be carried out by the Clayton system, or other culicidal fumigation.

II.—Terrestrial Prophylaxis.

This in special hospitals is practically the isolation of the patient under a mosquito net, the object being to prevent infection of any Stegomyia mosquitoes present. It would be difficult to devise a more all-round useful contrivance than the portable isolating chamber of Dr. Marchoux.

In private houses the sick are at once to be placed under a mosquito net and afterwards transferred to a suitable room (selected by the family), which is first disinfected of mosquitoes and then rendered mosquito-proof; the patient is then at liberty to receive friends, if he wish. Insecticides, such as pyrethrum or sulphur, are then to be burnt in all the other rooms of the house in order to destroy any mosquitoes which may have bitten the patient. The chief request of the sanitary authorities is that they be informed at once of the occurrence of a case of yellow fever, as

the first four days of sickness are those on which mosquitoes are liable to take the germ of yellow fever to transmit it to other persons.

In spite of the excellent results everywhere obtained by the special methods of anti-mosquito prophylaxis, we are still in ignorance of the true origin of the yellow fever germ. A careful study of some epidemic revivals would tend to indicate that investigation should be directed to the soil; and several instances are now quoted in which, after some years of immunity, large public works have caused an outbreak of this disease.

T. P. B.

"Le Caducée," February 4, 1905.

Hygiéne Coloniale; De la prophylaxie du paludisme (Colonial Hygiene; Malaria prophylaxis). By Dr. Granjux.

In the Colonies all measures hitherto adopted come under the following general headings:—

(*a*) Destruction of mosquitoes and their habitats.

(*b*) Protection of the inhabitants from mosquito bites.

(*c*) The use of quinine as a cure and as a preventive.

The destruction of adult mosquitoes is not to be hoped for, and none extols this struggle; what is essential is that their larvæ should be attacked by suppressing all stagnant waters, or, in default, by pouring petroleum on the surface of these waters.

The protection of the inhabitants against mosquito bites has been attempted by means of fine gratings placed in the doors and windows of the houses, with a view to the exclusion of these insects. Those who have had recourse to this practice in Italy and in Corsica speak highly of the results. But the conclusion to be drawn from certain authoritative opinions are that these gratings and gauze-fittings, whilst excellent for the isolation of contagious cases, will only be an exceptional means in the prophylaxis of malaria, because it requires on the one hand constant supervision on the part of the authorities; and on the other hand, from those protected an obedience and a respect for orders which are only to be exceptionally found amongst Colonials, and never amongst natives.

As for the medical prophylaxis of malaria, this must be in accordance with the malarial history of the place; for instance, in Algeria for six months in the year all quinine prophylaxis is superfluous, but Koch's method must be resorted to in the event of the year threatening to be marked by a severe malarial epidemic.

As the action of quinine on the stomach is often to be deplored, the ideal method of administration of this drug—especially when its prolonged use is in question as in prophylactic medication—is to convey a soluble salt of quinine, such as the hydrochlorate, directly into the intestine. This can be done by encasing this salt with gluten which is not attacked by the acid gastric juice, but is dissolved in the alkaline intestinal secretions; moreover, these glutenised globules of hydrochlorate of quinine not being influenced by heat or by damp, are the best medicinal form for malaria prophylaxis.

In conclusion, Dr. Granjux states:—

(1) The disappearance—or, as an alternative, the petrolage—of stagnant waters from the vicinity of any habited centre, is imperative. These measures must be insisted on with energy and without exception.

(2) The mechanical protection of habitations is only applicable under exceptional conditions which are rarely to be found.

(3) Medicinal prophylaxis is worthy of retention. If this be judiciously regulated by a physician, it means the protection of explorers, of workmen who have to break the soil, and of expeditionary forces.

(4) In malarial districts, whatever be the method of prophylaxis employed, general and individual hygiene is required more rigorously than anywhere else.

T. P. B.

"Presse Medicale," November 5, 1904.

Contagiousness in France of Amboeic Dysentery. By M. Dopter.

Dopter contends that amœbic dysentery is not confined to the Tropics nor to persons who have returned to Europe from the Tropics. In France cases of amœbic dysentery occur, and Dopter is of the opinion that the disease is contagious.

"Arch. für Schiffs und Trop.-Hyg.," November, 1904.

SLEEPING SICKNESS AND TRYPANOSOMA.

Krüeger gives details of five cases of sleeping sickness observed in Togo. The youngest patient was 9, and the oldest 35 years of age. The disease was attended by increase of temperature in the early stages, but fell to normal later, and in the latest stages was considerably below normal. Examination of the blood showed red corpuscles decreased, white corpuscles increased, and lymphocytes twice the normal number. In each case Castellani's trypanosome was found in the cerebro-spinal fluid, but in the peripheral blood in only one patient. Krüeger concludes that: (1) Sleeping sickness is a chronic disease of an infectious nature; (2) it is due to a trypanosoma to be found in the cerebro-spinal fluid; (3) the trypanosoma cannot be demonstrated in the cerebro-spinal fluid after death, even when looked for twelve hours after death; (4) nineteen animals injected with cerebro-spinal fluid from patients suffering with the disease died, three of them with symptoms of sleeping sickness; (5) sleeping sickness does not seem to be an intoxication due to food; (6) monkeys infected with tsetse trypanosoma died in the third week, and in their blood the trypansomes prevailed in greater numbers than in monkeys injected with the trypanosomes of sleeping sickness of human beings.

P. F.

"Archivio di Biologia normale e patologica," Firenze, 1903.

Ricerche e osservazioni sulpiede di Madura (Researches and Observations on Madura Foot). By Dr. G. Polverini, of the Pathological Institute of Florence.

Polverini states that as madura foot or mycetoma had been only sparingly mentioned in Italian literature, he availed himself whilst in India of the opportunity of studying some cases both clinically and bacteriologically, and afterwards followed up his studies by histological research in the laboratory at Florence. After giving a full description of this disease and of the experiments carried out by himself, he raises the ques-

tion as to whether actinomycosis and mycetoma are two identical forms of disease caused by the same micro-organism, or whether they are separate entities.

He states that it is at once seen that the two diseases differ from each other, whether as regards their seat, their course, or the changes produced in the tissues; that actinomycosis is more frequently found in animals than in man, whilst up to now no case of mycetoma had been described as having occurred in animals; that the histological lesions produced by the two micro-organisms are different; that the club-shaped terminations which are found in actinomyces do not exist, or at all events cannot be demonstrated by the same methods, in mycetoma. He also lays stress on the great difference which exists between the two micro-organisms when artificially cultivated, for whilst the *Streptothrix maduræ* grows readily on nutritive media made with hay-infusion, *actinomyces* grows badly on such media. Streptothrix does not liquefy gelatine, whilst actinomyces does; streptothrix does not grow in blood serum or on egg, whilst actinomyces will do so; actinomyces can be inoculated experimentally in animals, whilst streptothrix is not at all pathogenic for animals; the filaments of streptothrix are finer, and more delicate than those of actinomyces.

As the result of his studies the author is convinced that actinomycosis and mycetoma, although they have some points of resemblance, are two distinct diseases, and that their identity cannot be reasonably admitted.

J. E. N.

"Rivista Critica di Clinica Medica." Anno y., Firenze, 1905.

Note sul Tifo Ricorrente, &c. (Notes on Recurring Typhus (? Relapsing Fever), with Special Reference to the Differential Diagnosis between this Disease and Bubonic Plague). By Dr. G. Polverini.

Polverini quotes some observations derived from his personal experiences during his stay in Bombay from 1898 to 1902. He noticed that, as a rule, the two diseases, whilst often prevalent at the same time, appeared to alternate in epidemic severity, plague predominating during the cold, dry weather, and recurring typhus during the hot weather and the rains.

The more prominent symptoms of recurring typhus were marked enlargement of the spleen, nearly always accompanied by enlargement and tenderness of the liver; icteric staining of the conjunctivæ and a high bodily temperature, the latter generally lasting about seven days and then terminating by crisis, but apt to be followed by a relapse after an interval of about a week; but the symptom on which Dr. Polverini lays great stress was the occasional tumefaction and inflammation of the lymphatic glands, which he looks upon, however, only as a complication. In recurring typhus the condition of the lymphatic glands is one of enlargement only, and although they may be tender on pressure, they are not of a serious nature, nor do they tend to suppurate; they may also appear early in the disease. An examination of the blood only demonstrates the presence of the *Spirillum Obermeieri*.

The author now quotes at length a hypothetical but possible case, in which a ship's surgeon might be suddenly called upon to diagnose quickly between recurring typhus and plague. He recommends first an examination of the patient's blood by the wet film method, when, if present, the spirilla are often readily seen. If this method prove negative, he now tries the dry film process, fixing the blood film with absolute alcohol and then staining it with diluted Ziehl's fluid; by this means the spirilla, if present, are coloured, and the plague bacilli take on a bipolar staining; but it not infrequently happens that the blood does not reveal the presence of micro-organisms, in which case the supposed bubo must be punctured and the pulp microscopically examined. If, again, this method fails to show any bacillary forms, the surgeon must have recourse to the only means of diagnosis left for demonstrating the possible presence of Obermeier's spirillum, and that is splenic puncture under antiseptic precautions. To complete the diagnosis the red blood cells may be counted, as in recurring typhus they are markedly diminished in number, whilst the leucocytes are increased, and although in plague there may be a certain amount of leucocytosis, nevertheless there is no corresponding diminution of the red blood cells. It must, however, be borne in mind that cases are on record in which the two diseases have occurred together in the same patient.

J. E. N.

EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Medicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate. Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular.

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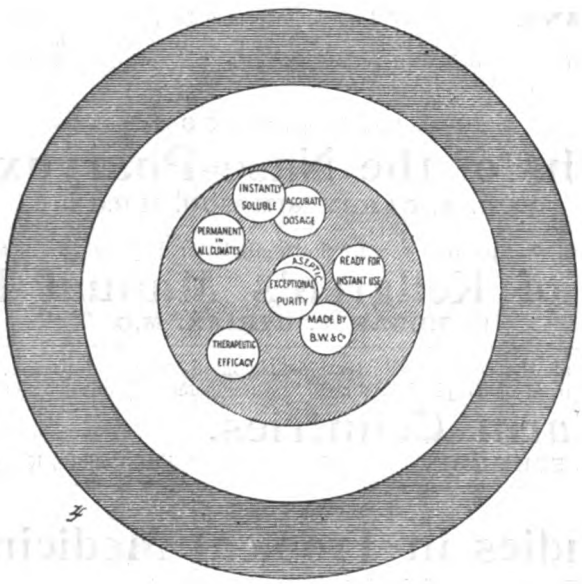
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Fig. 2

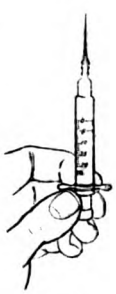


Fig. 3

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[For London School of Tropical Medicine, see page vii.]

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The Journal of Tropical Medicine.

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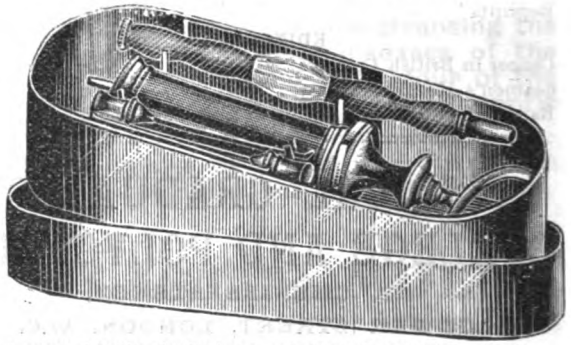
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Original Communications.

THE USE OF CYLLIN IN SPRUE.

By WILLIAM HARTIGAN, M.D., D.P.H.

SPRUE, to give its common though not very appropriate name (for the sprue described by Dutch writers is, both in its course and lesions, totally distinct from the disease known under that name in China), is a complaint so baffling, so difficult to cure, recurring so frequently after apparent recovery, that any hint as to its treatment is worth recording.

Sprue shows itself in various forms, not merely as mild and severe, but with actual differences in inception, onset and progress. Many seemingly favourable cases prove most intractable, whilst others, veritable skeletons, unable to digest the simplest food, make rapid and complete recoveries.

In the majority of cases which quickly respond to treatment the mischief is, I believe, confined to about the lower eighteen inches of the bowel, whilst in the intractable cases the upper portion of the colon and probably lower part of ileum (*pace* the ileo-cæcal valve) are involved. Hence, in the former, the almost certain efficacy of *copious* antiseptic lavage, when *properly* carried out with the soft rubber tube inserted at least twenty-four inches into the bowel; whilst in the latter, although such "washings" may lessen the odour and frequency of the stools, they have little or no effect on the actual course of the disease.

Somewhat similarly if a liver abscess is subcapsular, situated near the surface, operation almost assures a cure; if, on the contrary, the abscess is "deep," the result is at least doubtful. In the one case we have got at the root of the evil, in the other only lessened it, the bacteria flourishing vigorously, owing to difficulties of drainage and asepticism, a fact pointed out by Mr. Cantlie.

It is possible that the original site of disease is the rectum and that it gradually creeps up the bowel; but if so, its progress must be very slow, for I have known cases where the disease lasted from two to four years with all the usual symptoms—wasting, sore tongue, frequent and abundant frothy stools—which were quite cured by "lavage" in two months. Others, who perhaps had at first less discomfort, two morning stools, a large and only slightly sore tongue, fairly well-nourished bodies, have steadily resisted all treatment, gradually lost weight, the stools have become enormous, consisting of frothy liquid, like that in a brewing vat, without bile and usually without mucus. The patients are unable to take the mildest or simplest nourishment on account of the pain caused to the mouth and tongue, and the almost immediate evacuation thereby brought on. In these apparent improvements may occur, followed by invariable relapse and eventuating in death.

In such cases "lavage" was useless, never reaching the site of disease. Could we have attacked it locally with antiseptics we should probably be equally successful in both class of cases.

We know little of the etiology of sprue, but we do know that its fatality is due to inability to assimilate food, the idea being that "the intestinal juices" are at fault, the wasted tubules producing a secretion deficient in quantity and poor in quality.

The liver also wastes *pari passu* with the disease; hence its general functions are impaired and the diminution or absence of bile contributes largely to the fermentation in the intestines, the distended abdomen and frothy stools. This explanation has for a long time seemed to me unsatisfactory. If the malassimilation were due to disease of the tubules, how account for the rapid recovery which, as I have said, frequently occurs after a few antiseptic injections; and if by similar means we are able to insure a like recovery in the second class of cases, this question becomes still more pertinent.

Dr. Begg, of Bath, informs me that slides taken from a case of sprue showed portions of the lower bowel to be covered by a gelatinous-like substance, shown by recent staining to be organised, in which were millions of rod-shaped bacteria. Underneath this layer the mucous membrane was breaking up as a natural consequence of pressure, and in course of time may be destroyed.

Supposing bacteria to be the cause of this disease, the efficacy of germicides would be explained and their presence would likewise account for the injury to the mucous membrane, owing to pressure by a semi-organised layer on the tubules and their consequent inability to perform their functions. Being convinced of the value of antiseptics applied locally, I have sought for a germicide which could be given internally with equally good results.

I tried boracic acid, so efficient locally, but it soon produced headache and increased digestive troubles; carbolic acid was likewise ill borne, salol made the stools more healthy, but did not cure; perchloride of mercury, so useful in the diarrhœa of children, was useless; naphthol also proved inefficient. Ordinary astringents, except for very occasional use, are harmful.

Dr. Bousfield's experiments with cyllin, a new disinfectant of the cresol series, showed that the *B. coli* in a normal intestine were practically destroyed *without constitutional disturbance*, being reduced 97 per cent. This furnished the clue I sought, and I soon was able to try the drug in sprue. Given in the form of intestinal palatinoids, 3 m. cyllin in each, which pass undigested through the stomach, but dissolve in the intestinal canal, I found them invariably well borne, the only complaint being of slight eructation, which soon passed off, and now with a purer product does not occur at all; the number of stools rapidly diminished, but constipation was not produced; in fact, the palatinoids seemed to regulate the bowels, as in two cases, practically cured, where there had been one motion per day, on stopping the palatinoids the bowels became irregular, one and even two days being missed, which in sprue is almost certain to cause a return of diarrhœa, but one palatinoid given at night produced a healthy morning stool.

The motions first lost their frothy character, then became gradually bile-stained and more consistent; the offensive odour slowly passed off, till finally the motions became formed or semi-formed, and, it is to be noted, never assumed the form of huge putty-like

masses seen in those cases where milk alone is given, in which so often constipation alternates with diarrhœa.

The palatinoids may be given every second hour, if necessary, but rarely more than eight a day are required, and very soon two or three suffice, the physician being guided by the nature and number of the stools. They are best given an hour after food.

The soreness of the tongue—psilosis, from which Thin named the disease—though it may not entirely disappear for months after the patient is really well, gradually lessens; but here local medication, cocaine, boric acid, &c., is undoubtedly useful, making the taking of nourishment easier and frequently postponing an evacuation, the orders for which an inflamed tongue convey to an irritable though convalescent intestine.

The tenderness so frequently noted over the lower part of the abdomen, not merely over the large intestine, as one might suppose, though there are often two or more particularly tender spots over the rectum, disappears, likewise distension, though flatulence, that curse of recovering sprue cases, may cause actual suffering for a year or more. Above all, there is a steady increase in weight, with ability to endure cold and take exercise without fatigue.

The great advantage of giving cyllin is that it enables the patient to resume an ordinary though restricted diet much sooner than when treated by dieting alone.

In a severe case of what I may term the intestinal form of sprue I should allow only milk, Benger's Food, and a good meat juice, for choice "Ramornie" brand, Australian, or Valentine's; then gradually give fish; underdone steak and mutton, eggs, fresh meat juice and scraped beef are often well borne from the first; bread and butter or boiled bread and milk frequently disagree.

I have rarely been obliged to have recourse to milk alone, and my experience of cases treated solely by rest and milk diet is that they take a much longer time to "get well," that their recovery is often not complete, relapses, particularly on returning to a hot climate, are frequent, showing, in my opinion, that whilst rest enables milk to be digested and thereby immensely improves the patient's condition, enabling him to recruit his army of phagocytes and bring them to do battle with the bacteria which are killing him, it only scotches, but does not kill the germs. Consequently, whilst he remains in a temperate, bracing climate, under conditions which do not lend themselves to bacterial propagation, he keeps fairly if not quite well, but on return to those conditions under which the bacteria originally bred and flourished, their merely dormant energies are again aroused, they breed actively, increase enormously, and are only checked in doing irreparable damage by the patient's caution, whose experience teaches him to be warned by the least symptom of recurrence and promptly go to bed and take milk.

Three patients who have returned to the East, having suffered severely from sprue and been cured by cyllin, have had no relapses or necessity for restricted diet.

Dr. Begg speaks highly of crude santonin given for the same object. One case came under my notice which, whilst under treatment by milk alone, had frequent relapses, but recovered completely after the exhibition of santonin. This drug frequently gives rise to general though temporary disturbance, a disadvantage which does not apply to cyllin. Other drugs will probably be found with similar favourable germicidal action.

To the principle underlying the treatment of this disease, not so much as to the drug used, I wish to call attention.

I had intended to illustrate this paper by cases, but its length precludes this.

I have made no statement which is unsupported by facts and incidences occurring in my own practice.

THE BREEDING AND REARING OF FOREIGN CATTLE IN THE TROPICS.

By Percy N. Gerrard, M.D.
Kaiping, Perak, Federated Malay States.

The following communication was addressed in the form of a letter to the Editors:—

May I be permitted a few lines in answer to your excellent leader for the week ending November 1, 1904, which has only just reached me. The questions involved in the heading, namely, the feeding of the Eastern communities, is surely one of the most vital; the effects of which the medical officer is called upon to face in warm countries, not, however, from the veterinary surgeon's standpoint, nor yet from the standpoint of the stock raiser, but from the infinitely more important one of the health and even the existence of Europeans and natives congregated in tropical towns; but the lamentable fact, however, remains, without a doubt, that generally speaking, in colonies and protectorates, unfortunately, the recommendations of medical men on such matters as food supply are frequently treated cavalierly or completely ignored.

As a means of dealing with a most essential part of the question introduced, I would suggest that, before relegating the matter to a Commission, a small business-like committee should be formed at home to collect short reports and suggestions which have been made already on the local foodstuffs and supplies by medical officers in the various colonies, and who shall eventually recommend—as I have not the slightest doubt they will do—*that British Colonial Governments shall establish, at as early a time as is consistent with the local wants, Government commissariat departments.* Stations as they open out, that is after, say, fifteen to twenty years from their establishment, occasionally have some one amongst them who takes his chance of regaining his own on imported sheep, goats, or cows, but I well remember a time when my dinner *menu* was for many days in the month somewhat as follows: *Hors d'œuvres*, chicken; *paté-soup*, hen; *entrée*, fowl, stewed! *joint*, roast *volaille*, in other words, chicken; *savoury*, liver on toast; and my regret has always been that my cook never could or would make a poultry pudding! There was practically no game in the district. This state of affairs is unnecessary, destructive of constitutions and of good work in out-stations.

Proper travelling refrigerators, with a central cold store, would prevent countless cases of intestinal trouble, and obviate the atrocious depression which monotony of diet induces even perhaps more quickly than tropical stress.

Although I am not in a position to quote "chapter and verse" in the matter of suggestions which have already been made by medical officers of methods to improve the beef and mutton of communities, yet many recommendations have been made by individuals, and also by groups of medical officers, on the question of the milk supply of certain towns, where there were sufficient cows, but where the milking arrangements were, and still are, revolting in their dirty simplicity.

Only a few days ago I learnt from an official that he had observed the "amusing" sight of a Bengalee washing his back hair in his beautifully polished (outside), copper-fastened, extra special, sanitary board, milk tin!

I have, in common with many other Anglo-Easterns, partaken of milk which has been preserved by freezing, and which is stocked in the refrigerators of the Canadian Pacific boats, and I can see no reason why milk in this condition (if proper arrangement were made) could not be carried to any out-station within 100 miles of any coast, from whence there exist roads or bridle-paths into the interior, or even 300 to 500 miles in places where railways exist,

I would therefore beg to suggest that, before any expensive scientific commission of trained experts be appointed, as suggested in your leader, a cheap, *i.e.*, non-travelling central committee be selected to enquire into the relative economical values of (*a*) stocking countries, which must remain destructive of domestic animal life for an indefinite time to come; (*b*) the value of central cold stores with travelling refrigerators under the control of a Govertment commissariat officer. An army must be fed, and is fed; why neglect our civil servants and other exiles who, after all, are making our Empire more than our army, because as they march they solidify their conquests by leaving in their wake towns, courts of justice, hospitals, and all the paraphernalia of civilisation.

I do not, however, propose to neglect local tropical cattle by my establishment of commissariat departments; but, as I do not know of any colony which has not now got its own veterinary surgeon to look after the local cattle, who imposes quarantine and limits disease, I submit that sufficient is being done from a political and economical standpoint in the matter of cattle, but that nothing is being done from either a political or economical point of view to feed our civil servants and others in the Tropics; and I am convinced that this is the direction in which we should proceed, and upon which money should be expended at the present time.

If, as you state, the rearing of cattle "will necessitate a radical change in the agriculture of the Far East," and again, if the quality of the meat available at present is poor, which it certainly is, then but one path remains to us, and that is to kill and freeze the cattle where they are healthy, and arrange for their cold transport.

THE RELATIVE POSITION OF SCHISTOSOMA CATTOI AND "BILHARZIA" AS REGARDS PATHOGENY.

By G. Lydston Crimp, B.A., B.C.(Cantab).

Late Deputy for Professor of Pathology, Government Medical School, Cairo.

Having just had an opportunity while up country in Egypt of seeing a copy of the *British Medical Journal* of January 7th, which contains the very interesting and exceedingly careful contribution of Dr. Catto on a new schistosoma found by him, I feel that I must make a communication pointing out several places wherein he has, doubtless from lack of opportunity for personal observation, made a few errors.

I am sure, from the general care evinced in the examination of the case in question, that he will realise that it is in no captious spirit that I write, but a year spent in the middle of bilharzia material has given me certain opportunities for observation which he has lacked.

Of the facts which he describes I have nothing to criticise, for although in the case of dissection of formaline specimens I know it to be exceedingly difficult to obtain anything approaching a respectable specimen of the worm itself, yet his plates speak for themselves. The special paragraph which contains the points at issue reads as follows:—

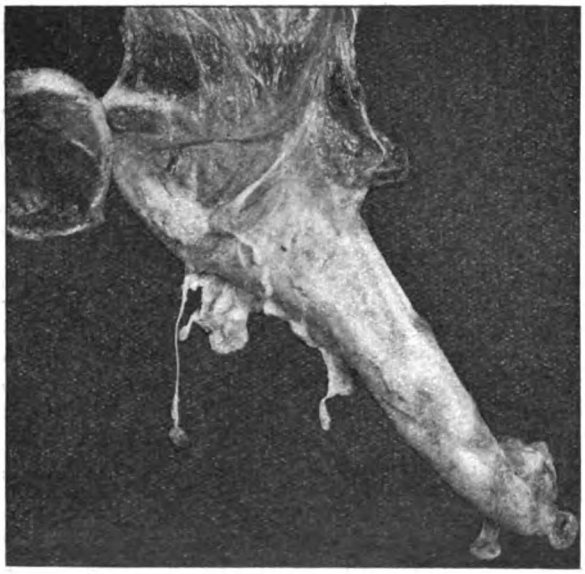
> The ulcerative lesions of the bowel produced by the new species differ from the corresponding lesions of the bladder produced by *S. hæmatobium* in the entire absence from the former of the fungating masses so characteristic of the latter. Further, the new species does not give rise to the perihepatic nodules as described by Sandwith in bilharziosis.
>
> In addition to the character of the ova and to the anatomical differences already noticed, there are certain other points which serve to differentiate the species.
>
> (1) The habitat of the *S. hæmatobium* is reputed to be venous only, whereas the habitat of the new schistosome is mainly arterial. Too much stress must not be laid on this point, seeing that it has not been proved that the former cannot affect the arteries or the latter veins.
>
> (2) The ova of *S. hæmatobium* affect mainly the urinary system, and escape from their human hosts by this channel. In the new species the ova apparently exclusively affect the alimentary system, escaping by this route from their human host.
>
> (3) In this case there is a much more general infection of abdominal viscera, for ova of *S. hæmatobium* have not been found in the pancreas and appendix.

It is impossible to compare the ulcerative lesions of the bowel caused by the new species with those of the bladder in "bilharziosis," because, in the latter, *both* organs are on one occasion or another affected, singly or conjointly, and the lesions in both organs are polymorphic. The "so characteristic fungating masses" do undoubtedly occur in vesical bilharziosis, but are not by any means the most frequent manifestation of this disease; while in the colon and rectum the type of ulceration observed is so varying as to have left me unable definitely to connote any one type with undoubted bilharziosis.

In this place it is but due to other workers to express, in very definite terms, the fact that the perihepatic nodules "described by Sandwith" owe their definite demonstration to Symmers (*Journal Path. and Bact.*, 1903), while Kartulis ("Weitere

Beiträge zur Path. Anat. der Bilharz," *Virch. Arch.*, 1898) had surmised the probable relation between the eggs and certain proliferations of the periportal connective tissue.

The second specific difference quoted above cannot hold water, in that, although in bilharziosis vesical lesions do perhaps predominate over intestinal, yet the latter are very frequent; while one case of infection by *Schistosoma Cattoi* is not enough to demonstrate the exclusive use of the rectum as a channel for evacuation of the latter.



BILHARZIOSIS OF APPENDIX.

Less still must we accept the third specific pathogenetic difference, that of the more or less diffusion of its influence. I have cases (as yet unpublished) where practically the whole intestinal and vesical tracts have been affected, besides the peritoneum, liver, and lung, and in some of which the most noticeable feature has been the *gross infection of the appendix*. I had intended publishing a note of these appendix cases earlier, but have been prevented by circumstances of time and place. However, as I happen to have with me a photograph of an affected appendix, I am now forwarding it to Sir Patrick Manson. It demonstrates an incrustation of the organ with a number of subserous nodules (some pedunculated), which microscopically are found to consist of whorls of fine connective tissue enclosing a number of bilharzia eggs, mostly possessing lateral spines.

Thus, although there seems very good reason to accept the morphological specificity of *S. Cattoi*, I consider that there is the slenderest possible evidence as to the difference in its pathogenetic possibilities.

To conclude, my experience as regards the liver in all cases of bilharziosis is in the same line with Kartulis, whose paper demonstrated the total impossibility of connoting any one *clinical* state of that organ with bilharzial infection.

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THE

Journal of Tropical Medicine

MARCH 1, 1905.

CANCER IN BRITISH COLONIES.

IN May, 1903, Mr. Chamberlain, when Secretary of State for the Colonies, issued a circular addressed to Governors and High Commissioners of the Crown Colonies and Protectorates inviting the co-operation of Government medical officers and private practitioners in the Colonies in the work being carried out under the auspices of the Cancer Research Fund. In the Blue-book just published a great deal of information on the subject of the prevalence of cancer amongst populations indigenous to the Tropics is collated. It is perhaps misleading to style the disease concerning which information is being sought "Cancer"; it would have been in all probability more accurate to have asked information in regard to Malignant Disease, including under that heading sarcomatous and carcinomatous affections. The diagnosis between sarcoma and carcinoma is not always determinable by clinical methods, and microscopic examinations are but occasionally possible in districts remote from medical centres. It is probable that sarcoma, although rare in the Tropics, is yet more commonly met with than is carcinoma, but neither the one nor the other occurs except very occasionally. It would seem as though malignant diseases, like some other ailments, diminish in frequency of occurrence as the Equator is approached from the north. In the African continent cancer has not been seen amongst natives of the

Gambia, Ashanti, and Natal. It is said to be rare in British Central Africa, the Eastern African Protectorate, Southern Nigeria, and on the Gold Coast. In the latter group, although the disease is reported to occur rarely, the returns seem rather to point to its possible absence in several of them. Thus in British Central Africa, although the Commissioner reports that cancer exists, Dr. Scott, of the Zomba Mission, during a fifteen years' residence there, had never seen a case; and Dr. Morris, of the Blantyre Mission, saw only one "supposed" case of cancer in four years. Dr. Old, during several years spent in British Central Africa, saw two cases of sarcoma but no case of cancer. In the Gold Coast Colony and Protectorates, Dr. W. R. Henderson, Principal Medical Officer, states that during ten years' observation he had never seen a case of cancer, so that we have no distinct medical testimony that carcinoma exists at all in the group in which cancer is described as rare. In St. Helena and Mauritius cases of carcinoma are reported; in the former, some three or four cases yearly in a population of 3,000 to 4,000. It must be remembered, however, that both in St. Helena and Mauritius the populations are of a heterogeneous or mixed character.

The reports from Asia are meagre; no cancer in Wei-hai-wei; but in Ceylon the number of cases occurring yearly is about 220. Sarcoma is said to be more uncommon in Ceylon than is carcinoma. Australasian reports state that malignant diseases have not been seen amongst aborigines in Queensland nor amongst the Pacific islanders, and Sir William MacGregor mentions having seen only one case of cancer during ten years in British New Guinea.

In the West India Islands reported upon, Grenada, the Leeward Islands and British Honduras, cancer is said not to be so common as in England. There are several interesting points that require to be cleared up. Do British emigrants resident in Crown colonies suffer more or less from malignant diseases than do people resident in Britain? Does the half-caste population suffer from the disease more than do either their white or coloured co-residents, and have mixed populations, whatever the parentage, a tendency to the disease? There is some evidence that Eurasians suffer from malignant diseases to a greater extent than do pure-bred natives, and that white people in the Tropics are less likely to be attacked than are their relatives at home. Seeing that microscopic investigation of the nature of malignant diseases generally is faulty, the age limit would seem to be the only practical basis on which to found an enquiry. It should be distinctly stated whether the sufferer is over or under thirty-five; and were a few clinical details given with each case, the assumption that the disease is sarcoma when under that age and carcinoma when over that age might be a justifiable basis on which to found a conclusion.

SEAMEN'S HOSPITAL SOCIETY.

At the Branch Hospital of the Seamen's Hospital Society at the Royal Albert Docks, London, Sir George R. Vyvyan, K.C.M.G., on February 9th, unveiled a new tablet over the Trinity House Bed. Sir George is the Deputy-Master of Trinity House; and the Chairman of the Seamen's Hospital Society, Mr. Perceval A. Nairne, referred in his address of welcome to the consistent support the Society had received for some eighty years from the Trinity House Corporation, the premier marine corporation of the world. Sir Patrick Manson, K.C.M.G., F.R.S., stated that the Seamen's Hospital Society and the School of Tropical Medicine in London, which was associated with it, had done good and useful work in behalf of the seafaring population of the country by providing a training in tropical medicine to surgeons in the Navy and Mercantile Marine. Sir George Vyvyan unveiled the tablet and said he was glad to think that the Corporation he represented had contributed so largely and for so many years to the funds of so deserving an institution as the Seamen's Hospital Society, and that Trinity House thereby helped to maintain not only the Hospital, under the direction of the Society, but also the Tropical School attached to the Branch Hospital. The School, although it had been in existence a few years only, had done excellent service to the Empire, and he hoped that the appeal for money which the Society was about to make in May, when Mr. Chamberlain was to preside over a banquet to enable the Society to clear off the debt they had incurred in behalf of the School, would be as eminently successful as it deserved to be. A permanent endowment was required for the School, and amongst the many persons interested in mercantile and colonial enterprises in this country there should surely be no difficulty in obtaining a substantial sum towards that end.

RAINFALL AND THE PREVALENCE OF DISEASE IN INDIA.

During the recent years of drought and famine in India owing to deficient rainfall, the normal increase of population was markedly checked. In Gujerat the population decreased by 19·1 per cent., whilst the rainfall was 20 per cent. below the normal; in Western Rajputana the figures were 18·9 and 22; in Central India, 14·8 and 22; in Bombay district, 8·1 and 11; in the Central Provinces, 8 and 5.

During the decennium 1891 to 1901, which included the years of drought and famine, disease claimed many victims, and there can be no doubt that the feeble condition of the people owing to famine was responsible for the inroads of several diseases. Cholera during the period caused 4½ million deaths; plague, 321,000; and malaria fever incapacitated a multitude of the inhabi-

tants. The decrease of population occurred during the six years of diminished rainfall, 1895 to 1900.

Taking, however, the ten years from 1891 to 1901, the total shortage of population is practically *nil*, or only $\frac{1}{136}$ of the normal total.

Extended irrigation is the only means of averting famine in India, and thereby lessening the mortality from several epidemic diseases that invariably accompany starvation.

"Annal d'Hygiène et de Médecine Coloniales," No. 1, 1905.

1. Le Pian au Camboge (Yaws in Cambodge). By Dr. Montel.

2. *Apropos* d'Ainhum (a Case of Ainhum). By M. Vivie.

(1) Six per cent. of infants vaccinated have yaws. The natives describe three varieties:—

(*a*) Framboesia, raspberry form.

(*b*) Crab-yaws.

(*c*) Plantar yaws is so common that twenty-two cases were found in one hundred and twenty native soldiers. Long fissures are seen in the thickened epidermis; on shaving this off a papilla is seen swollen like a raspberry. On removing the whole epidermis alveoli are seen filled with a cheesy-white material. In all forms the crusts and scrapings show vegetable parasites, mycelium, spores, and aspergilli, which are connected with the pathology of the disease.

The syphilitic origin of yaws is disproved by syphilitic patients contracting yaws, and cases of yaws contract syphilis.

Treatment by mercury is useless. Iodide of potash in progressive doses, beginning with 15 grains, and local application of tincture of iodine, are rapidly beneficial. A picture is given of a child who had sixty-six pustules distributed in various parts.

(2) On the Ivory Coast ainhum is very common, but its progress very slow. It begins as a ring of cutaneous induration, which constricts the base of the toe so that the end of the toe falls off. It begins on the little toe, but may invade the next or even the middle toe.

A picture is given of two feet: the left little toe had been almost loose, and had been snipped off; the right little toe is markedly constricted. The other toes show constrictions at an early stage There was no trace of leprosy.

T. P. B.

"Medicinskoe Obozregenie," Moscow, vol. lx., No. 21, 1904.

Malarial Affections of Nervous System. By V. P. Dobrokhotoff

Dobrokhotoff mentions mental depression, neuralgia and neuritis as common sequelæ of malarial infection. A case of multiple sclerosis he describes is attributed to malaria. His opinion is that the parasites injure the endothelium of the blood-vessels, directly or by their toxins or their products, leading to thrombosis in the capillaries. The cerebral capillaries are, according to Dobrokhotoff, particularly liable to become thus affected with consecutive hæmorrhages. He attributes the parenchymatous changes in the liver, spleen, kidneys, and ganglion cells to malaria. Quinine is a potent remedy in affections of the kind.

Reprint.

SCHISTOSOMA CATTOI: A NEW BLOOD FLUKE OF MAN.

By JOHN CATTO, M.B., D.P.H.

Craggs Prizeman, 1904, *London School of Tropical Medicine.*

(From the *British Medical Journal* of January 7, 1905.)

WHILE I was Resident Medical Officer at St. John's Island Quarantine Station, Singapore, cholera broke out on a passenger ship from China. Some four hundred coolies were quarantined. Amongst them was a Chinaman from the Province of Fukien, who presumably had never been away from China before.

He died of cholera after three days' illness. He was plump for a coolie. During life it was found that the right lobe of his liver extended two fingerbreadths below the costal margin. The left lobe was a handbreadth below the sternum, and its percussion dulness merged into the splenic. The spleen was palpable one inch from the iliac crest, and its notch was in line with the anterior axillary fold.

A necropsy was made an hour and a half after death. The adipose tissue throughout the body was a prominent feature. The appearance of the peritoneum suggested repeated attacks of peritonitis. The appendices epiploicæ were thickened, and in some places matted together. The recto-vesical pouch was almost obliterated. Encasing the large intestine was a coat of fat, most marked at the mesenteric attachment. The mesenteric tissues were all thickened and loaded with fat. The mesenteric and prevertebral glands varied in size from a bean to a golf ball, the largest forming a cluster near the duodenum. The liver was uniformly enlarged. Its surfaces were markedly nodular, its borders sharp and irregular, the whole presenting the appearance of a very coarse cirrhosis. Its consistence was greatly increased, but its colour was not appreciably altered. The coats of the gall-bladder were thickened, and a layer of fat almost completely encased this viscus, which was distended with clear mucoid, apple-jelly-like material containing several minute black gall-stones. The colon was much thickened throughout. The mucous membrane was swollen, hyperæmic, and friable, presenting numerous small circular, superficial erosions and patches of necrosis. The outer coats were very tough, almost cartilaginous, and showed no tendency to ulcerate. The rectum was three-quarters of an inch thick all round, and was adherent to the bladder. It nearly filled the true pelvis. Where adhesions had formed the bladder wall was thickened, but elsewhere it was healthy, and nowhere was the vesical mucosa diseased. The sigmoid was uniformly thickened; in tracing the bowel upwards the thickening became less marked and more patchy. The coats of the cæcum and appendix vermiformis were uniformly hypertrophied, the mucous membrane presenting small patches of ulceration and necrosis. The appendix was provided with a mesentery, and a distended lymphatic could be recognised running along its free surface. The liver and bowel cut gritty on section. The lower end of the ileum was thickened in patches, and the mucosa congested over corresponding areas. The enlarged spleen was pigmented. The stomach, pancreas, suprarenals, kidneys, heart, and lungs showed no signs of coarse disease.

As the lesions above mentioned were peculiar, some of the viscera were preserved. Sections of the liver, mesenteric lymphatic glands, and bowel (fig. 1) were made in Singapore by Dr. Finlayson, and at the Kuala Lumpor Research Institute by Dr. Daniels. Numerous small oval bodies having a smooth, stout capsule were found. Opinions differed as to whether these were coccidia or the ova of some unknown parasite, but the case was published in the Journal of the Malaya Branch of the British Medical Association as a case of coccidiosis in man. Subsequent examination in this country of sections of intestine showed ova and filariaform embryos in bundles in the mucosa and villi of the small intestine. These, along with other specimens, were shown at the Medical Research Club, London, but no definite conclusion regarding the nature of the oval bodies was come to. An eminent German authority, to whom pieces of tissue were kindly sent by Dr. Bulloch, stated "that the oval bodies were neither coccidia nor the eggs of a trematode, but those of a nematode of unrecognisable species, &c." At Sir Patrick Manson's suggestion, to whom the specimens were shown, I devoted my whole time to working out the case at the London School of Tropical Medicine, where systematic examination and sections of all the preserved tissues were made. Soon after I commenced investigating, nematode embryos were found in smear preparations from the large intestine, and one was found in the vessel of a mesenteric lymphatic gland. These facts, coupled with the juxtaposition of ova—some empty—and embryos in the mucosa and villi of the small intestine, led to the suggestion of a nematode infection, but as no evidence of a differentiated embryo could be seen in any of the eggs, even in those lying in close proximity to the bundles of free embryos, one hesitated to adopt this conclusion. Subsequently, in sections of the mesocolon, I found adult trematodes, male and female, in the blood-vessels (fig 9), the ova (fig. 9, O) in the uterus of the female corresponding in every particular with the oval bodies found in the various viscera. It was now clear that I had to deal with concomitant trematode and nematode infections; that the oval bodies were the ova of the trematode; and that their close association with filarial embryos was merely accidental.

A preliminary paper was read and drawings with specimens exhibited at the meeting of the British Medical Association at Oxford. Later, on continuing my dissections, entire mature worms were found in the smaller mesenteric blood-vessels (figs. 4 and 5). It was difficult to determine the nature of the vessels in which the mature parasites lay. They were manifestly blood-vessels, but whether arteries or veins was not so evident. I submitted my preparations to several eminent physiologists and pathologists. Unfortunately, there was no unanimity among them as to the arterial or venous nature of the vessels. I am constrained, therefore, to admit that this important point is for the present unsettled. My own conviction, however, is that the parasites occur in both arteries and veins (see fig. 2).

Parental Forms.

The male (figs. 4 and 5) is 9 mm. long, less than half a millimetre broad, and, in my spirit preparations, of a light brown-yellow colour. The measurements are only relative as they are taken from spirit specimens. Three entire adult males, with fragments of others, were found. They closely resemble those of *Schistosoma hæmatobium*, having their lateral borders incurved ventrally, thereby forming a canal groove along the entire length—the gynæcophoric canal—in which the female lies. The anterior extremity is blunt, with a terminal sucker in which the mouth lies. The dorsal lip of the sucker is longer than the ventral. Behind the sucker the body is slightly constricted, forming a neck. The worm attains its maximum breadth at the posterior sucker, which lies ventrally in the gynæcophoric canal about half a millimetre behind the anterior sucker, whence the body tapers gradually to a truncated posterior extremity. The posterior sucker is oval and trumpet-shaped, its long diameter being transverse; it is larger and more muscular than the anterior. Both suckers are retractile.

The alimentary system consists of a mouth furnished with a sphincter, a strong muscular œsophagus, and two cæca joining posteriorly to form a terminal ampulla. The œsophagus, surrounded by small glands, is constricted at its middle, and divides, just anterior to the acetabulum on which rests the posterior sucker, into the two cæca which run along either side of the body. Three anastomoses of the cæca were made out.

The excretory system ends in an excretory pore which is subterminal and ventral. The nervous system has not been satisfactorily determined. The reproductive system consists of a lobular testicle or testicles, vesiculi seminales, vas deferens, and genital pore with its sphincter, opening centrally into the gynæcophoric canal behind the posterior sucker.

A distinctive feature of this schistosome is the absence of ciliated warts on the integument, the presence of which constitutes so marked a feature of the African worm. Minor anatomical differences are: (*a*) Smaller size of the worm; (*b*) its longer vas deferens; (*c*) the characters of the testes.

The female (fig. 4, B) is almost cylindrical (diameter 0·113 mm.), longer, more slender, and darker than the male. The cervical constriction is quite as marked as in the male. The suckers, alimentary and excretory systems, correspond with those of the male, except that the excretory pore is terminal. Owing to excessive fragility of the spirit specimen it was found impracticable to mount an entire specimen of the female worm.

The reproductive system consists of a muscular, central, elongated uterus occupying the anterior half of the body, and opening near the posterior sucker. The ova are arranged irregularly in single or in double rows. At the posterior extremity of the uterus are the shell glands and opening of the oviduct with the vitello duct. Behind this the body bulges slightly to taper subsequently to a sharply-pointed extremity. The bulging marks the position of the ovary; posteriorly are the vitellogene glands.

From the female *Schistosoma hæmatobium* the following differences have been made out:—

(*a*) The posterior sucker is larger than the anterior the converse holds good in the *Schistosoma hæmatobium*.

(*b*) The bulging-in region of ovary is more marked.

(*c*) The arrangement of the yolk glands is different.

In both sexes minute, highly refractile spines are seen in the suckers and at their anterior extremities.

The eggs (fig. 7) are yellow-brown in colour, oval, measuring on an average 70 μ long by 40 μ broad. They vary between 60 μ and 90 μ in length and 30 μ to 50 μ in breadth. They have a stout, smooth shell on section. There is no trace of a spine or operculum. In the sections some of the ova were empty; others contained a central, circular mass which stained deeply; some contained cells staining at their periphery, whilst others had cells staining in the centre. These may or may not completely fill the ovum. In some cases the cellular contents were seen escaping from a ruptured ovum. In no one of the ova could distinct embryos be detected, although appearances suggestive of a developing embryo could be observed. The ova differ from those of *Schistosoma hæmatobium* in their colour, shape, size, and in the absence of a spine. The bilharzia ovum is of a brown colour, contains a well-developed embryo, and is larger, 0·19 mm. (Looss.) Moreover, its ends are more pointed, and it is provided with a spine.

The ulcerative lesions of the bowel produced by the new species differ from the corresponding lesions of the bladder produced by *S. hæmatobium* in the entire absence from the former of the fungating masses so characteristic of the latter. Further, the new species does not give rise to the perihepatic nodules as described by Sandwith in bilharziosis.

In addition to the character of the ova and to the anatomical differences already noted, there are certain other points which serve to differentiate the species.

(1) The habitat of *S. hæmatobium* is reputed to be venous only, whereas the habitat of the new schistosome is mainly arterial; too much stress must not be laid on this point, seeing it has not been proved that the former cannot affect arteries or the latter veins.

(2) The ova of *S. hæmatobium* affect mainly the urinary system, and escape from their human host by this channel. In the new species the ova apparently exclusively affect the alimentary system, escaping by this route from their human host.

(3) In this case there is a much more general infection of abdominal viscera, for ova of *S. hæmatobium* have not been found in the pancreas and appendix.

(4) The geographical distribution differs, for no case of bilharziosis has yet been met with in China.

Histopathology.

The parent worms are found in small groups at the bifurcations of the smaller mesenteric vessels, and partially or completely plug the vessels. In one arteriole 0·621 mm. in diameter two complete sections of the male and female are seen *in copula* (fig. 9). Blood-cells are occasionally seen between the wall of the vessel and the parasites.

Where ova accumulate they provoke at certain places a small-celled infiltration, which gives place later to a great proliferation of fibrous tissue. Pigment is seen in the liver and bowel. In the intestine from cæcum to anus the ova occupy roughly two concentric layers —the one subperitoneal, where the ova are comparatively scarce; the other in the submucous coat, where they are innumerable, in some cases densely packed (fig. 6). Between these zones in the muscular layers ova with their long axes at right angles to the bowel lie in single or in double rows. Ova are plentiful in the mucosa, are more numerous in the necrotic areas, and are seen apparently in process of extrusion (fig. 8) at the margin of an ulcer.

Of the intestinal tract, the rectum and appendix are most affected; the distended lymphatic vessel in the appendix already referred to is choked with ova. Everywhere throughout the small intestine ova were found, but only in patches and in relatively small numbers.

The obliteration of the recto-vesical pouch was probably caused by the irritation produced by ova accumulating in vast numbers in the wall of the rectum. In the many sections examined no ova were found in the vesical mucosa, though they were present in small numbers in the outer coats of the bladder.

In the liver the ova are plentiful, lying singly or in larger or smaller clumps embedded in the markedly hypertrophied fibrous connective tissue.

In many of the enlarged mesenteric lymphatic glands ova were found in the thickened trabeculæ.

In addition to the localities already mentioned ova were found in the outer wall of the gall-bladder, in the pancreas, liver capsule, fibrous coat of the larger mesenteric vessels, mesentery, pylorus, duodenum, jejunum, and ileum. Several sections were made of the round ligament of the liver and of the diaphragm without any ova being found.

Doubtless the life-history of the new schistosome corresponds with that of other trematodes, the geographical range of the intermediary host being the principal determining factor in its distribution.

That this case is unique is extremely improbable. When proper search has been made doubtless many additional cases will be found in the natives of the endemic districts. As a ready means of ascertaining the degree of prevalence and geographical range of the infection I would suggest systematic examination at *post-mortem* examinations of scrapings from the mucous membrane of the bowel, preferably of erosions or ulcerated patches. With a low power of the microscope only a few minutes are required to determine the presence or absence of the ova in such preparations.

The ova have probably been found many times in the course of ordinary microscopical examinations of fæces, but have been mistaken for the ova of *Ankylostoma duodenale*, which they closely resemble.

It is interesting to note the accumulation of filariaform embryos in the villi, probably in the lacteals, of the intestinal tract, and their presence in fæces. I am not aware of any similar observation.

Diagnosis.

Sub-Kingdom	Vermes.
Class	Plathelminthes.
Order	Trematoda.
Family ...	Schistosomidæ.
Genus	Schistosoma.
Species ...	Schistosoma Cattoi (Blanchard) 1904.

Measurements given below are from specimens found in hardened tissues:—

Return of Diseases and Deaths in 1903 at the following institutions: Lunatic Asylum, Jawatta; Leper Asylum, Hendala; Leper Hospital, Kalmunai; De Soysa Lying-in Home; Lady Havelock Hospital, Colombo; General Hospital, Colombo; Civil Hospitals, Panadure, Kalutara, Negombo, Kandy, Katugastota, Gampola, Matale, Nuwara Eliya, Mulhalkele, Vavuniya, Mullaittivu, Mantota, Point Pedro, Galle, Hambantota, Matara, Balapitiya, Tangalla, Batticaloa, Trincomalee, Kurunegala, Puttalam, Marawila, Chilaw, Anuradhapura, Badulla, Ratnapura, and Kegalla; District Hospitals, Avisawella, Neboda, Dikoya, Lindula, Uda Pussellawa, Kelebokka, Maskeliya, Deltota, Nawalapitiya, Teldeniya, Ramboda, Dimbula, Pussellawa, Deniyaya, Haputale, Lunugala, Rakwana, Balangoda, and Karawanella; Immigrant Hospitals, Dambulla, Mannar, Pesalai, and Mihintale; Field Hospitals, Maha-oya, Nikaweratiya, Daudugama, Alutnuwara, Medagama, Buttala, Godakawela, and Kolonna.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	38	1	38
Anæmia	397	39	407
Beri-beri	17	9	17
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	111	—	112
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	3542	449	3685
Delirium Tremens	9	1	9
Dengue	—	—	—
Diabetes Mellitus	42	2	45
Diabetes Insipidus	23	11	25
Diphtheria	1	1	1
Dysentery	2294	658	2384
Enteric Fever	336	71	358
Erysipelas	79	15	86
Febricula	56	3	58
Filariasis	—	—	—
Gonorrhœa	792	1	816
Gout	—	—	—
Hydrophobia	7	2	7
Influenza	418	4	427
Kala-Azar	—	—	—
Leprosy—			
(*a*) Nodular	29	15	102
(*b*) Anæsthetic	55	32	178
(*c*) Mixed	104	45	246
Malarial Fever—			
(*a*) Intermittent—			
Quotidian	2351	23	2414
Tertian	486	7	498
Quartan	1287	14	1319
Irregular	208	43	214
Type undiagnosed	101	6	107
(*b*) Remittent	210	15	214
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	3215	576	3457
Malta Fever	—	—	—
Measles	20	—	20
Mumps	14	—	14
New Growths—			
Non-malignant	297	7	310
Malignant	256	33	263
Old Age	198	63	215
Other Diseases	311	29	324
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	24	13	26
Rachitis	—	—	—
Rheumatic Fever	5	—	5
Rheumatism	2093	16	2170
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	2	1	2
Septicæmia	48	22	48
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	3	—	3
Syphilis—			
(*a*) Primary	944	2	998
(*b*) Secondary	547	6	581
(*c*) Tertiary	166	6	177
(*d*) Congenital	57	6	60
Tetanus	64	32	66
Trypanosoma Fever	—	—	—
Tubercle—			
(*a*) Phthisis Pulmonalis	964	267	1004
(*b*) Tuberculosis of Glands	41	14	42
(*c*) Lupus	22	—	22
(*d*) Tabes Mesenterica	16	4	24
(*e*) Tubercular Diseases of Bones	5	1	6
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	10	1	10
Yaws	3073	11	3254
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	1597	99	1661
Circulatory System—			
(*a*) Valvular Disease of Heart	121	33	126
(*b*) Other Diseases	77	15	81
Digestive System—			
(*a*) Diarrhœa	2868	935	3009
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	182	5	185
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	34	16	35
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	79	11	83
(*g*) Cirrhosis of Liver	94	32	100
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	2006	174	2085
Ear	76	1	79
Eye	635	17	670
Generative System—			
Male Organs	970	5	1002
Female Organs	1708	44	1742
Lymphatic System	557	10	577
Nervous System	958	182	1452
Nose	68	—	68
Organs of Locomotion	300	14	314
Respiratory System	3097	595	3197
Skin—			
(*a*) Scabies	446	3	455
(*b*) Ringworm	50	—	51
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	411	2	425
(*f*) Other Diseases	5734	59	6039
Urinary System	525	82	547
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	8	1	8
(*c*) Other Injuries	6868	417	7087
Parasites—			
Ascaris lumbricoides	425	13	435
Oxyuris vermicularis	1	—	1
Dochmius duodenalis, or Ankylostoma duodenalis	1662	272	1775
Filaria medinensis (Guinea-worm)	10	—	10
Tape-worm	—	—	—
Poisons—			
Snake-bites	10	1	11
Corrosive Acids	2	—	2
Metallic Poisons	8	—	8
Vegetable Alkaloids	21	2	21
Nature unknown	15	1	15
Other Poisons	156	1	162
Surgical Operations—			
Amputations, Major	536	30	552
,, Minor	1258	40	1305
Other Operations	178	—	183
Eye	—	—	—
(*a*) Cataract	68	—	73
(*b*) Iridectomy	19	—	20
(*c*) Other Eye Operations	57	—	63

Total Deaths.—The total deaths numbered 5,622, against 6,560 in 1902, showing a decrease of 938. A table showing the death-rate in the various hospitals and asylums in the Island for the year as compared with the last year is annexed. For purposes of comparison the death-rates among the mixed races and Malabars have been shown separately :—

Hospitals	Mixed Races		Malabars		Total	
	1902	1903	1902	1903	1902	1903
Civil	5·59	6·12	16·01	15·86	8·18	8·47
Field	3·22	3·08	9·97	3·87	3·86	3·14
Immigrant	3·71	2·86	6·37	9·00	4·52	4·77
District	4·60	4·74	21·97	19·52	16·88	14·21
Asylums	7·49	10·26	8·37	10·80	7·61	10·33
Total ..	5·26	5·97	18·25	17·13	9·87	9·3

The percentage of deaths to cases treated in the Civil Hospitals showed a slight increase among the mixed races, and a slight decrease among the Malabars. In the Field Hospitals there was a slight decrease among the mixed races, and a decrease of 6·10 among the Malabars. In the Immigrant Hospitals the decrease among the mixed races was ·85, but among the Malabars there was an increase of 2·63. In the District Hospitals there was a slight increase among the mixed races, but among the Malabars there was a decrease of 2·45. Taking all the hospitals and asylums together, there was a slight increase in deaths among the mixed races and a decrease of 1·12 among the Malabars. The percentage of deaths to total treated was 9·3, against 9·87 during the previous year.

Hospital Accommodation.—This was generally sufficient; occasionally some overcrowding took place. This remark especially applies to the Leper Asylum at Hendala, for the extension of which steps are being taken, to the Lunatic Asylum, and to the General Hospital, Colombo.

Water Supply—The water supply—with the exception of the following institutions: Matale, Mannar, Galle, Chilaw, Nikaweratiya, Balangoda, Trincomalee—was reported to be good, pure, wholesome, and abundant. Water for drinking purposes is, as a rule, boiled and filtered before use. Water supply schemes for Nanu-oya, Balangoda, and Tillicoultry are under consideration.

Bathrooms.—All hospitals are provided with separate bathrooms for males and females, and furnished with tubs, which are filled with hot or cold water, according to the requirements of the patients. Patients who can help themselves, however, prefer to bathe in streams, where there are such adjoining a hospital.

Drains.—There are no covered drains. The drains are all surface ones for carrying away the ward washings, rain, and storm water.

Sewage.—The conservancy of the latrines is entirely on the dry-earth system, the excreta being removed daily and buried, or incinerated at some distance from the Hospitals. Doulton's earthenware squatting plates have been introduced in some of the hospitals.

Inspection.—The hospitals were all inspected either by me or the Colonial Surgeons of the respective Provinces. The number of these visits of inspection and the official designation of the visitors will be found given in the return of each institution. The books were produced when called for, and were generally found complete and made up to the date of examination. The reports of inspection by the Colonial Surgeons, as well as those by me, were forwarded to Government when necessary.

Food Supply.—The provisions for the various hospitals were supplied by purveyors on contract approved by Government. The system works satisfactorily. The Medical Officers in charge of the respective hospitals examine the food before it is served out to the patients, and reject such articles as do not come up to contract sample.

Dispensaries.—Four hundred and sixty-seven dispensaries, including branch institutions and visiting stations, were in operation. Of these, 297 were Civil, 44 District, and 126 Estate. They are distributed as follows: In the Western Province 33, Central 62, Northern 44, Southern 36, Eastern 32, North-Western 36, North-Central 39, Province of Uva 30, and Province of Sabaragamuwa 29, and on estates 126. In the Civil and District dispensaries there were treated 921,392 persons who paid 1,434,250 visits, against 975,160 persons who paid 1,499,227 visits in 1902.

Port Duties and Immigration. — The number of vessels which arrived at the Port of Colombo was 3,077, against 2,802 in 1902, 2,617 being steamers, 1 sailing ship, and 459 native craft. The number of native traders was 66,068 and coolies 47,858, against 60,672 and 33,760 in the previous year. Dr. Woutersz took up the duties of Senior Port Surgeon on October 10th, 1903.

Ragama Camp.—The number of coolies who passed through the camp during 1903 was 46,478, against 34,280 in 1902. There was only one fatal case of cholera there during the year. Of the number of coolies who passed through the camp, 2,493 were vaccinated, and the rest either had marks of successful vaccination or of small-pox.

De Soysa Bacteriological Institute.—Dr. S. C. Paul, F.R.C.S., was in charge of this institution till December 30th, 1903, when Dr. Aldo Castellani, M.D. (Florence), assumed duties as Director. The fees recovered amounted to Rs. 325·50, against Rs. 298 in the previous year.

Ceylon Medical College.—The College, in charge of Dr. Chalmers, M.D., F.R.C.S., contains lecture halls, laboratories for chemical physiology and pathology, physiology, biology and pathology, dissecting room, offices, photographic rooms, a museum and Colonial Medical Library, and a separate building for lady students containing sitting-room, lavatory, and special dissecting room. An extension is proposed for 1905 for students' common room, lecturers' lavatories, materia medica museum, a lecture hall, and a suite of laboratories for the Public Analyst.

From October, 1904, the new chemical lecture hall and laboratory and the two physical laboratories at the Technical College will be used by the students of the Medical College. A Professor of Chemistry is being obtained for the Medical College from England, and should arrive before October, 1904. During the year 11 new medical students, 4 apothecary students, and 1 casual student entered the College. There were 96 medical, 32 apothecary, and 1 casual student at the end of the year. The total fees amounted to Rs. 17,260·50, which is an increase of Rs. 1,347·35 upon the fees of 1902.

The Government at my suggestion allowed the expenses for a post-graduate course at the Medical College for a fortnight's duration in April, for officers of this Department stationed at a distance from Colombo, to familiarise themselves with some of the recent advances made in Medical and Surgical Science. Thirteen Medical Officers attended. It is hoped that this course will be followed by similar ones each year.

Civil Medical Stores.—Dr. Owen Johnson was in charge of this institution as Acting Medical Superintendent. Mr. A. D. Cotton is the Chief Storekeeper. The drugs, chemicals, and instruments received from England amounted to Rs. 178,473·81, from India Rs. 4,320·62. The cost of articles purchased from the Government Stores and the local market for the preparation of drugs in the Medical Stores came to Rs. 5,734·15, while the cost of repairing surgical instruments amounted to Rs. 50·50, and that of transport and postage to Rs. 3,943·22; extra service, petty expenses and contingencies to Rs. 685·54; the sale of medicines to Government Departments and others, Rs. 2,343·68; sale of medicines to planters, Rs. 1,683·15. The sale of unserviceable articles realised Rs. 90·62, and the value of the surgical instruments lost and paid for by the officers of the Department amounted to Rs. 192·28. The cost of quinine, fever powders, &c., issued to Government Agents and others free of cost was Rs. 2,984·67.

Strength of the Medical Department.—The strength of the Medical Department was as follows: 1 Principal Civil Medical Officer and Inspector-General of Hospitals, 1 Assistant Principal Civil Medical Officer, 1 Registrar of the Medical College, 1 Director, Bacteriological Institute, 7 Colonial Surgeons, 1 Superintendent of the Lunatic Asylum, 1 Surgeon in charge of the General Hospital at Colombo, 2 Medical women, 23 Assistant Colonial Surgeons, 27 Deputy Assistant Colonial Surgeons, 40 Sub-Assistant Colonial Surgeons, 15 Probationer Sub-Assistant Colonial Surgeons, 4 Health Officers, 245 Apothecaries, 1 Chief Medical Storekeeper, 1 Chief Inspector of Vaccination, 6 Inspectors of Vaccination, and 108 Vaccinators.

Estates Branch.

During the year 1903 there were 1,798 estates scheduled to 33 districts and 31 sub-districts, with 20 District Hospitals and 29 District Dispensaries and 13 Civil Hospitals and Dispensaries.

To attend to the medical wants of the above the following officers were employed: Deputy-Assistant Colonial Surgeons 15, Sub-Assistant Colonial Surgeons 10 (1 vacant), and Apothecaries 28.

During 1903 there were 9,158 estate labourers treated in the District Hospitals and Civil constituted District Hospitals, against 10,995 in 1902. Of these 1,812 died, a death-rate of 19·78 per cent. Of the mixed races 14,693 were treated, of whom 884 died, a death-rate of 6·01 per cent.

In the Civil Hospitals worked partly as District Hospitals the death-rate of estate labourers was 20·61 per cent., whilst in the District Hospitals it was 19·45 per cent. The highest death-rate (27·8 per cent.) among the estate labourers occurred in the District Hospital at Haputale, and the lowest (8·31 per cent.) in the Civil Hospital at Balapitiya. The admissions into the former were 241, into the latter 36. In the Civil Hospital, Mulkalkele, which was open only during the fever season, there were no deaths among estate labourers.

The total number of days the estate labourers stayed in hospital was 243,125, an average of twenty-six days. Of these, 169,056 were paid for by the estates, the rest being charged to the fund. The total number of days mixed races stayed in District Hospitals was 176,033, an average of twelve days.

The total number of estate labourers treated at the out-door dispensaries was 73,455. The total number of estate labourers treated on estates was 25,265.

The total number of births reported from estates was 11,637, of which 5,778 were males, 5,609 were females, and 250 were still-births.

The number of deaths reported from estates was 8,224, of whom 4,028 were males, 4,192 were females, and in 4 cases the sex was not stated.

The expenditure under the Medical Aid Ordinance amounted to Rs. 523,163·72, including exchange compensation, and receipts to Rs. 326,535·91, derived from the following sources: Export duty Rs. 140,022·09, hospital charges for treatment of coolies Rs. 54,784·90, recovered for visits paid to estates Rs. 20,660, sale of unserviceable and superfluous articles Rs. 205·62, medicines sold to superintendents of estates Rs. 1,745·99, medicines sold in bulk to superintendents of estates and prescriptions compounded Rs. 10,253·59, dispensary collections Rs. 2,273·82, cost of maintenance, medicine, and funeral expenses of other than estate labourers Rs. 92,680·87, recoveries for maintenance of others Rs. 3,909·03. The net expenditure was Rs. 196,627·81. One hundred and twenty-six dispensaries are now established in the planting districts. The gross expenditure was—

	Rs. c.
Civil Branch	1,294,925 85
Estates Branch	523,163 72
Total ..	1,818,089 57

And the net expenditure was—

	Rs. c.
Civil Branch	1,064,408 73
Estates Branch	196,627 81
Total ..	1,261,036 54

No. 4.—CYPRUS.

MEDICAL REPORT ON THE CYPRUS HOSPITALS AND DISPENSARIES, INCLUDING THE LUNATIC ASYLUM AND LEPER FARM.

By GEORGE A. WILLIAMSON, M.A., M.D.

This Report is purely Statistical.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	1	—	1
Anæmia	22	—	24
Beri-beri	—	—	—
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	33	4	38
Delirium Tremens	—	—	—
Dengue	—	—	—
Diabetes Mellitus	—	—	—
Diabetes Insipidus	—	—	—
Diphtheria	1	1	1
Dysentery	22	2	22
Enteric Fever	38	9	45
Erysipelas	8	—	8
Febricula	2	—	2
Filariasis	—	—	—
Gonorrhœa	49	—	50
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	115	1	116
Kala-Azar	—	—	—
Leprosy—			
(*a*) Nodular	9	9	60
(*b*) Anæsthetic	9	5	67
(*c*) Mixed	—	—	—
Malarial Fever—			
(*a*) Intermittent	—	—	—
Quotidian	53	—	54
Tertian	49	—	50
Quartan	19	—	19
Irregular	24	—	24
Type undiagnosed	18	1	19
(*b*) Remittent	68	1	69
(*c*) Pernicious	15	2	15
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	—
Mumps	10	—	10
New Growths—			
Non-malignant	5	—	5
Malignant	15	—	15
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	5	—	5
Rheumatism	33	—	34
Rhoumatoid Arthritis	4	—	4
Scarlet Fever	—	—	—
Scurvy	—	—	—
Septicæmia	1	—	1
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	—	—	—
Syphilis—			
(*a*) Primary	22	—	24
(*b*) Secondary	11	—	11
(*c*) Tertiary	—	—	—
(*d*) Congenital	2	—	3
Tetanus	1	—	1
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
Other Tubercular Diseases	17	1	18
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	57	2	58
Circulatory System—			
(*a*) Valvular Disease of Heart	8	1	8
(*b*) Other Diseases	9	1	11
Digestive System—			
(*a*) Diarrhœa	16	1	17
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	4	1	4
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	1	—	2
(*g*) Cirrhosis of Liver	4	1	4
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	124	7	136
Ear	4	—	4
Eye	128	—	140
Generative System—			
Male Organs	30	1	30
Female Organs	15	—	17
Lymphatic System	27	—	31
Nervous System	52	10	84
Nose	3	—	3
Organs of Locomotion	45	—	52
Respiratory System	264	25	275
Skin—	—	—	—
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	4	—	4
(*f*) Other Diseases	53	1	54
Urinary System	32	4	33
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	210	6	217
Parasites—			
Ascaris lumbricoides	5	—	6
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	4	—	5
Poisons—			
Snake-bites	1	—	1
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	8	—	8
Surgical Operations—			
Amputations, Major	63	9	64
,, Minor	163	1	165
Other Operations	2	1	2
Eye	40	—	40
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

	Female.	Male.
Length	? mm.	... 9 mm.
Breadth	0·115 mm.	... 0·447 mm.
Breadth (near ovary)	0·134 mm.	—
Diameter at neck	0·041 mm.	... 0·180 mm.
Gynæcophoric canal	absent ...	entire length of body
Shape and size of posterior sucker	0·061 by 0·047 mm. (long. diam. longitudinal)	0·290 by 0.189 mm. (long. diam. transverse)
Shape and size of anterior sucker	0.05 mm. circular	0·124 mm. circular
Distance between centres of these	0·146 mm.	... 0·552 mm.
Genital pore...	behind posterior sucker	behind posterior sucker
Excretory pore	terminal	...subterminal
Tubercles and cilia	absent	... absent
Spines in suckers	present, but scarce	present

Habitat of Adults: Mesenteric vessels.

Ova: Oval with rounded ends and smooth stout capsule, destitute of spine and operculum.

Size: 0·065 to 0·090 mm. by 0·030 to 0·050 mm.

Found in intestinal tract and its appendages.

Number of Cases: One.

Symptoms: Probably colic and dysentery.

Physical Signs: Enlarged liver and spleen.

Geographical Distribution: Province of Fukien, China.

Type Specimen: Museum of London Tropical School of Medicine. Mounted in xylol balsam unstained from preserved formalin tissue.

It is possible that the filariaform embryos above referred to also escaped into the lumen of the bowels from the ulcers, for on making smear preparations from various parts of the bowel these embryos were found. In one smear thirteen embryos were present, but in many others none were found. These embryos had the following measurements and characters; these, however, cannot be taken as accurate, as none were got in fresh state.

Average length	0·300 mm.
Greatest thickness	0·008 mm.
Sheath	present.
Shape of head	truncate conical.
,, tail	sharp pointed.

(The sheath in many cases could not be seen, but embryos may discard it when in unnatural surroundings.)

Ova of *Trichocephalus dispar*, *Ankylostoma duodenale*, *Ascaris lumbricoides*, in numbers, were found in the smears. Adult worms of all these were also found in the bowel.

I am deeply indebted to Sir Patrick Manson for much encouragement and criticism: and also for his sending specimens to the International Zoological Congress at Berne, where they were examined by Professor Blanchard, Dr. Loos, Ward, Stiles, Grassi, Monticelli, and other zoologists, who all agreed that the parasite was a schistosoma and new to science. Professor Blanchard has done me the honour of naming this new helminth *Schistosoma Cattoi*. To Drs. T. S. Kerr and E. E. Henderson the credit is due for the excellent drawings and photomicrographs.

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A NEW TREMATODE.

(Editorial comment issued with the reprint of Dr. Catto's article from the *British Medical Journal*.)

The activity in the study of tropical disease, so marked a feature in the medical history of the last few years, has given us many new facts—facts important in themselves but even more important on account of the light they throw on general pathology, and especially on the etiology of disease. Not the least interesting and curious of these discoveries is that of which the author, Dr. John Catto, gives a very complete account in our issue of to-day.

The profession has long been familiar with that curious trematode *Schistosoma hæmatobium* (*Bilharzia hæmatobia*) and the peculiar form of endemic hæmaturia for which it is responsible. The South African War has brought us many examples of this infection, and doubtless, as the extensive endemic areas infested by the parasite come to be settled up, the disease will become even more familiar to the profession in England. Although recently it has been shown that this or a similar parasite may be acquired in the West Indies, in the United States of America, in Mesopotamia, and in India, yet in these countries it is very uncommon. Bilharzia is essentially a parasite of Africa, where in not a few localities—Egypt, for example—it is present in a large proportion of the inhabitants.

It would appear, however, that Asia, though practically exempt from the endemic hæmaturia produced by *S. hæmatobium*, possesses a schistosome of its own, also a blood parasite, though not involving, like the familiar schistosome, the urinary tract and portal circulation, but affecting principally the intestinal tract and mesenteric arteries, and giving rise to inflammatory and ulcerative lesions in the intestinal mucous membrane.

As to the specific differences between the two parasites, Dr. Catto's observations leave us in no doubt. The ova alone are distinctive, the *S. hæmatobium* producing a spined ovum with a thick brown shell containing a ciliated embryo, the *S. Cattoi* producing a non-spined ovum with a thinner and more transparent shell enclosing an embryo which does not develop in the human body beyond the morula stage. Furthermore, the male *S. hæmatobium* is provided with a tuberculated integument, whereas the integument of the male *S. Cattoi* is smooth, without irregularities of any sort. These features alone, not to mention the respective locations of the worms, are specific differences; probably when fresh specimens come to be examined morphological differences in the internal anatomy also will be recognised.

That this new parasite has a wide geographical range is probable. Dr. Catto informs us that he has recently received a section of intestine, prepared in a Japanese laboratory in 1900, which shows ova having exactly the same characters and occupying the same position in the intestine as in his own case. It is

certain, therefore, that the disease occurs in Japan, as well as in China, whence Dr. Catto's case came.

Dr. Catto offers an explanation of the reason why the existence of such a parasite has not been recognised before, which is probably correct. He says the ova in the stools have been mistaken for the ova of ankylostoma, which they resemble in size, shape, and general appearance. In searching stools for the ova of parasites a low magnifying power is used and a critical examination of each egg is not generally made; now that Dr. Catto has pointed out the necessity for a more careful scrutiny it is very possible that the ova of the new schistosome may frequently be encountered in Asiatics. We trust observers in India and China will bear this in mind, and also act on Dr. Catto's hint to examine scrapings from the surface of the bowel in patients who have died from chronic enteritis with or without ulceration.

There can be no question now of the existence of two species of schistosoma in men. We have long thought that there might yet be another species, namely, that which produces the lateral-spined ova, found only in bilharzia disease of the rectum. The explanation usually given is that the lateral position of the spine in the bilharzia ovum is merely an anomaly or accidental occurrence; this is not entirely satisfactory. It is difficult to understand why the same species of parasite should produce a terminal-spined ovum when it attacks the bladder, and a lateral-spined ovum when it attacks the rectum. Observers should endeavour to ascertain if the rectal bilharzia be not a distinct species with a special habitat and producing a special form of egg. To establish or confute this hypothesis parental forms must be sought for in the blood-vessels in the rectum. Hitherto it has been believed that *Schistosoma hæmatobium* lives in the venous system, especially the portal. Dr. Catto appears to have shown that the new schistosoma occurs both in arteries and veins; might it not be that *Schistosoma hæmatobium* has a similar distribution?

So far we have had no adequate explanation as to how the parental bilharzia, living in the interior of the blood-vessels, manages to deposit her eggs outside the vessel. The eggs cannot attain this position by being carried by the blood stream to the capillaries of the bladder; the blood stream sets in the opposite direction. The parent worm must somehow pierce the walls of the vessel; how it succeeds in doing this has yet to be explained. In the case of Dr. Catto's parasite the remarkable uniformity of the layer of eggs in the mucous membrane, as illustrated by his photomicrograph of a section of the appendix, is difficult to explain. The eggs are not in the capillaries—which they are too large to enter—but they may be in the lymphatic spaces, and possibly we may get an explanation of their singularly uniform distribution when we know more about the direction of the lymph currents in the bowel.

The remarkable position of the female worm, lying as she does embraced by the male, the cephalic ends of each diverging like the branches of a tree, suggests that such an arrangement, observed in both species of schistosoma, has some definite purpose. We would suggest that this purpose is the plugging of the vessels during the act of oviposition. When the ova in the gravid female are mature the worms, male and female, migrate along the blood-vessels until they are brought up at the bifurcation of the smallest vessel their size permits them to enter. Arrived here the head of the male enters one branch and plugs it, while the head of the female enters and plugs the other. Thus hæmorrhage would be prevented when the female, by means of some apparatus not yet recognised, pierces the wall of the vessel, and through the small hole so made ejects her ova into the perivascular tissue, whence they are distributed by the lymph stream.

The presence of integumental bosses in the male worm in *S. hæmatobium* and their absence in *S. Cattoi* probably has reference to their respective positions in the circulatory system; the latter lying principally in the arteries, the current of blood maintains the worms in their proper position, but in the case of *S. hæmatobium* the current would tend to carry them away during oviposition were it not that the male or outer worm has a rough integument by which to adhere to the vessel walls.

The mode of acquisition of bilharzia is still unknown. Possibly Dr. Catto's discovery may in time throw some light on this point, which is a most important one, seeing that it has a direct bearing on prevention.

However these things may be, Dr. Catto's discovery, for which he has been awarded the Craggs Prize, and on which we heartily congratulate him, cannot fail to suggest many interesting problems both in natural history and pathology.

THE DESTRUCTION OF MOSQUITOES.

(Extracts from "An Account of the Drainage and other Works Carried Out with this Object during 1902 and 1903 at St. Lucia, West Indies.")

By Major W. M. Hodder.
Royal Engineers.

Major Gorgas, Medical Corps, U.S. Army, on the Stamping Out of Yellow Fever in Havana.

When we commenced work in Havana, the Island had been suffering for five years from an exhausting civil war, and during the few months preceding the city had undergone a blockade by the American fleet. The hygienic conditions of the city were, therefore, at that time, considerably worse than they were in normal times. But the non-immune population was small; immigration had dwindled during the war, and had practically stopped for the year preceding.

We went to work on the usual sanitary lines, with our efforts directed more particularly toward yellow fever. I will not attempt any description of the general sanitary work, but describe the methods adopted toward yellow fever.

Up to July of the first year of American occupation, we had little yellow fever in the city. Then immigrants began to pour in, and some 16,000 reached Havana between July and December 31st in the year 1899. From July to December 31st we had quite an epidemic of yellow fever, and December of 1899 was the severest December, as regards yellow fever, that had occurred for years.

In February, 1900, I was appointed the Chief Sanitary Officer for Havana, and I know from personal observation that from that time the regulations with regard to yellow fever were carefully carried out.

The reporting of yellow fever was compulsory. Upon the report of a case, it was promptly isolated and quarantined by guards employed by the Sanitary Department. No communication whatever was allowed within the quarantined area, except that of the visiting physicians and the sanitary inspector. All supplies had to pass through the sanitary guard. The isolation was as complete as military authority and liberal expenditure could make it. The case was then referred to a Board of experienced physicians, who visited the patient and made the diagnosis. When the case terminated in death, the body was buried with the usual sanitary precautions adopted in highly dangerous diseases. In all cases the quarantined area was disinfected: first by carefully wiping down everything with a bichloride solution, and then by filling all rooms with formalin gas, using a litre of the 40 per cent. solution to each thousand feet of space disinfected. Fabrics of all kinds were taken to the steam disinfecting plant and there disinfected. Under this system we hoped to decrease yellow fever greatly, and in the course of a few years to eradicate it from the city.

The general sanitary measures adopted appeared to be rapidly decreasing the general death-rate. The general death-rate in 1898 was 91·03 per thousand; in 1899 it fell to 33·67, and in 1900 continued to decrease to 24·40. But our work apparently had no effect upon yellow fever.

The winter epidemic of 1899 continued through the spring and summer, reaching in the fall the proportions of a sharp epidemic, even for Havana. We had during the year 1900, 1,244 cases of yellow fever with 310 deaths. All classes suffered, particularly the higher officials on the Military Governor's staff. The Chief Quartermaster of the Island, the Chief Commissary for the Island, and one of the aides of the Military Governor died of yellow fever.

The Sanitary Department was much discouraged at the result of the work. It seemed to me that general sanitary measures could not be more extensively carried out than we had done during this year. We had all the power of the military authority behind us, and ample means. During this year, on the internal sanitation of houses, exclusive of street cleaning, disposal of garbage, &c., we spent about 25,000 dols. per month, and employed some 300 men daily. The general sanitary conditions were improving in the most satisfactory manner, but we evidently had not produced the slightest effect upon yellow fever.

We commenced 1901 much discouraged, with the most unfavourable outlook as far as yellow fever was concerned. The non-immune population was larger, probably, than it had ever been before. Twenty-four thousand immigrants had come into Havana during the year 1900. Yellow fever was in every part of the city. The deaths from yellow fever in January and February were large, and the probabilities all pointed to our having a more severe epidemic in 1901 than in 1900.

The results of the investigations by the Army Board of the theory, first advanced by Dr. Charles Finlay, that the Stegomyia mosquito was the only carrier of yellow fever were published about this time. This work was so brilliant in its execution and so positive in its results that, as I look back now, I am surprised that I was not at once convinced. But many years of contact with men engaged in the practical work of managing yellow fever, and my own personal experience with this disease, had so impressed me with the belief that *fomites* were the principal and, practically, the only carrier of the disease that I had scant belief in the mosquito theory. But General Wood was determined that every possible measure should be taken for the reduction of the disease, and he authorised me to go to any reasonable expense in providing for the destruction of mosquitoes, which I then considered only a possible and exceptional means of transmitting yellow fever.

But having undertaken it, the Department bent every energy to carrying it out thoroughly, and as I look back, I have the satisfaction of believing that we could not have carried it out more thoroughly even if we had known that the results would be what they have been.

In looking over the ground beforehand, we concluded that for practical operations three fields of work had to be considered.

In the first place, to destroy all the Stegomyia we could, so as to limit the number of insects capable of conveying the disease. For it seems obvious that if we had no Stegomyia we should have no yellow fever.

In the second place, to prevent the Stegomyia from biting the yellow fever patient; because, if we could prevent the mosquito becoming diseased, we would also prevent yellow fever.

And in the third place, to destroy all mosquitoes that had bitten yellow fever patients and thus become infected; because if these are destroyed, it is evident that the disease would be stopped.

With the object of reducing the number of mosquitoes an ordinance was issued requiring all people within the city limits to keep receptacles containing water mosquito proof. The city was divided up into districts, and an inspector appointed for each district, who kept up a constant inspection with the view of enforcing these ordinances. He was accompanied by men with oil-cans to oil all puddles, cesspools, &c., about the dwellings, and, after sufficient notice had been given, to destroy all receptacles in which larvæ were found. All persons having larvæ on their premises were fined under the municipal ordinances. Fifty men were employed in this work. One hundred men during most of the summer were employed under proper superintendence in the suburbs, draining all pools and low ground and oiling such places as could not be drained; that is, during most of the past summer 150 men devoted their attention to killing mosquitoes in the larval stage.

To meet the second proposition, that is, to keep the Stegomyia from biting the infected man, all hospitals where yellow fever was received were ordered to be thoroughly screened, and this was at once enforced. In cases of yellow fever occurring in private houses, the Sanitary Department screened them at public expense. Ordinarily, within two hours after the report

of a case of yellow fever, the quarantined area was thoroughly screened. We kept a sufficient number of ready-made screens on hand for the purpose, and thirty men were employed in this work.

To meet the third proposition, that is, killing the infected mosquitoes, the infected building and all adjacent buildings were gone over from top to bottom with pyrethrum powder; 150 pounds on the average were used in each case. This work was done in addition to the disinfection carried out the preceding year.

While pyrethrum powder is not as good a mosquitocide as some other substances, it is the least objectionable to the people whose dwellings are being fumigated. It causes no injury to fabrics, and within four or five hours the room can be again occupied without discomfort. It, however, does not kill all mosquitoes. A good many of them are simply intoxicated, and will revive if exposed to fresh air. For this reason the mosquitoes have to be carefully swept up and destroyed. We then went through the whole month of June, up to July 21st, before we had another case. The houses contiguous to the infected house were gone over in the same way on the possibility of infected mosquitoes having escaped to neighbouring houses. Every room was carefully sealed and pasted, just as we had done in using formalin. In this work some forty men were employed during the summer. We used a pound of pyrethrum powder to each 1,000 cubic feet of air space.

In January, 1901, we had twenty-four cases of fever, with seven deaths, a large number for that month; in February eight cases and five deaths.

The mosquito work was inaugurated February 27th. We went through March with only two cases, which occurred on the 2nd and 8th. I was much pleased with this, but not particularly impressed, knowing that it might be a coincidence. We then went to April 20th without another case. This was unexpected, particularly as the year had commenced so badly, and as there was plenty of non-immune material around. The Table will show that this condition of affairs had never been approximated before in Havana. On April 21st and 22nd we had two more cases, but under our system of disinfection it did not spread. I began to feel pretty certain by this time that the results were due to our mosquito work. On May 6th and 7th we had four more cases, but this focus was promptly controlled. We then went through the whole month of June, up to July 21st, before we had another case.

It was exceedingly important to have all cases reported, so as not to let a focus get started and spread. A great element in the reporting of cases was to have as little opposition as possible on the part of the people. The fumigation for the mosquito caused very little inconvenience, compared with the disinfection of fomites; and after much discussion and deliberation with the officers in charge of the disinfecting work, I determined, the latter part of June, to do away with all sanitary measures against yellow fever, except those directed towards the mosquito, as the only means of the transmission of the disease.

These measures went into effect July 1st, and after that time nothing was sent to the disinfecting plant in yellow fever cases; and at the infected point, only measures looking to the destruction of mosquitoes were taken. The guard was still kept at the infected house, but the physician was allowed to specify a reasonable number of immunes who might go to and from the quarantined area. The guard was directed to see that the screen doors were kept closed, and that the ordinary sick-room hygiene was carried out.

About the middle of June a pronounced focus of yellow fever developed in Santiago de las Vegas, a town out twelve miles from Havana. The successful management of this focus was another evidence of the efficacy of the methods adopted in Havana, but the length of this paper does not allow me to go into details of these cases. Santiago de las Vegas is a town of 5,000 inhabitants, with a non-immune population of 475. It is really a suburb of Havana, and considerable numbers of people come and go every day.

Besides Santiago de las Vegas, there were three or four other towns with direct communication that were having yellow fever about this time.

We discovered 9 cases that came into the city of Havana from Santiago de las Vegas during June, July and August. As Havana had been entirely free from yellow fever during June, I am inclined to think that Santiago de las Vegas was the point from which we became reinfected.

During July we had 4 cases in Havana, with 1 death; during August 6 cases with 2 deaths. Becoming satisfied that we were being reinfected from outside towns, I obtained authority from the Military Governor to place inspectors on all railroads coming into Havana from infected points. These took the names of all the non-immunes coming into the city, and kept them under observation for a week. This worked very well in practice. All the cases known to have come into the city were reported by these Inspectors.

As the infection was severe in Santiago de las Vegas, an appropriation of $4,000 was made for the purpose of stamping out the disease there. We adopted the same methods there as in Havana, and at once controlled the disease. The last case occurred in Santiago de las Vegas August 31st. A case from this point was reported October 14th, but I, personally, do not think it was a case of yellow fever. It was an exceedingly mild and doubtful case, though diagnosed as yellow fever by the Board.

On September 28th we had our last case in Havana. During October, November, December and January we had none.

The whole year has been very unusual in its yellow fever conditions, and is far below any preceding year of which we have record in the number of cases which have occurred. October and November have always been months when yellow fever was rife in Havana, and to have had none at all in these months in 1901 is remarkable.

During 1900 the general death-rate had been greatly lowered by the sanitary work done, but yellow fever had not been much affected, and we had a sharp epidemic.

In 1901 all the conditions were unchanged, except that work for the destruction of mosquitoes was

carried out, with the result that yellow fever at once almost disappeared, and really did disappear in the last three months of the year.

I submit this as evidence of the practical demonstration of the "Mosquito Theory."

It will be seen that the result of the above measures was the stamping out of yellow fever from Havana, where no cases (except those imported) have occurred from October, 1901, to November 30th, 1903. But although the disease has gone, the labours of the Sanitary Department of Havana have not ceased, the extracts given above amply testifying that up to the present time this Department and the Superior Board of Health for the Island of Cuba are taking every precaution and acting with promptness and vigour at every point.

The deduction I make is that, with a comparatively small expenditure of money, but with a very careful organisation, the difficulties of wiping out this disease from the face of the earth do not appear insuperable.

The great success attained in Cuba in stamping out yellow fever would at first sight lead one to suppose that the same results could be obtained in the cases of malarial fevers.

But on investigation of the conditions which produce malaria, it will clearly be seen that such is very far from the truth. Mitigation of these diseases is all we can hope for; but at the same time, by the method to be described later on, almost any locality of a limited size, no matter how unfavourably situated, can, by sufficient expenditure of money and proper organisation, be rendered almost (if not quite) free from the class of mosquitoes which carry the microbe of the disease, and consequently from the disease itself.

The reasons why malaria cannot be stamped out appear to me to be as follows:—

(1) The patient remains a source of infection for many days, perhaps years; for the disease, as is well known, may be dormant in the system for a very long time and may break out in non-malarious countries without any fresh infection.

(2) The inhabitants of malarious districts are not immune, but are generally saturated with malaria from their birth; although they do not, as a rule, get such severe attacks as Europeans, yet they constitute a permanent reservoir of infection.

(3) There is, on the face of the earth, too vast an extent of swamps, where exists the combination of an infected native population and the Anopheles mosquito.

Notes and News.

THE next Australian Medical Congress is to be held in Adelaide in September, 1905.

THE "SANITAS" COMPANY, LIMITED.—The annual general meeting (27th in number) of the "Sanitas" Company, Limited (disinfectant manufacturers), was held on the 22nd inst., at their new premises in Locksley Street, Limehouse, London, E., under the presidency of the Chairman, Mr. C. T. Kingzett, F.I.C., F.C.S., who congratulated the shareholders upon the continued prosperity of the business and their prospects for the future. Although the past year had not been by any means a favourable one to their class of business in particular, and was generally recognised as a poor one in respect of the general trade of the country, the business had continued to expand, and their sales were greater than in any previous year. Their manufactures included practically all kinds of disinfectants and many sanitary appliances, and "Sanitas Fluid" still easily held first place as a non-poisonous and effective disinfectant for household and sick-room purposes. The balance to credit of profit and loss account, after making provision for bad and doubtful debts, repairs to plant and machinery and other charges and contingencies, adding the amount brought forward from 1903 of £2,227 9s. 7d. and deducting income tax, amounted to £15,582 12s. 5d.

Remedies.

DIPHTHERIA. — Swab throat with perchloride of mercury solution 1 in 1,000, or 1 in 500, and when patient is old enough gargle with chlorinated soda or 4 per cent. solution of formalin (Sir Lauder Brunton in *Clinical Journal*, February 15th, 1905). Russell Rundle has employed formolyptol as a spray, as a gargle and as internal remedy in 2 minim doses for diphtheric throat with marked success (*Lancet*, February 15th, 1905).

Medical News.

MORTALITY IN SOUTH AFRICAN MINES.—The comparative death-rate per 1,000 between native and Chinese labourers in the South African mines from August to December, 1904, was as follows: August, 37 deaths per 1,000 natives, 14 Chinese; September, 40 natives, 25 Chinese; October, 51 natives, 22 Chinese; November, 56 natives, 28 Chinese; December, 53 natives, 27 Chinese. The number of Chinese employed in the mines during the last six months of 1904 were respectively: July, 1,388; August, 4,945; September, 9,020; October, 12,965; November, 17,469; December, 20,885.

MEDICAL SCHOOL FOR SINGAPORE.—An earnest endeavour is being made to establish a medical school in Singapore. The Hon. Tan-Jick-Kim is interesting himself in the raising of funds for the endowment of the school, and it is to be hoped the scheme will prove successful. Should a sum of about £7,000 be got together the Straits Settlements Government is prepared to provide a building and to equip it for teaching purposes.

DYSENTERY DUE TO BACILLUS DYSENTERIÆ FALLING ON CONJUNCTIVA.—Charles Dodge, Rochester, New York, states that an assistant in a laboratory broke a test-tube containing cultures of the *Bacillus dysenteriæ* (Shiga). Some of the material is reported

to have touched the eye, Within twenty-four hours typical dysentery resulted. The occurrence may have been a coincidence, but if not, the possibility of direct infection of dysentery in man by the bacillus is brought within the area of practical pathology.

Leprosy in Bengal.—There are reported to be upwards of 35,000 lepers within the Province of Bengal.

Plague disturbs educational life in India in many ways. The native schoolboys, anxious for holidays as all schoolboys are, petition their masters from time to time to close the schools. In one school, where hesitation on the part of the schoolmasters was apparent, the scholars bought dead rats in the town and left them about the school premises in order to create a panic to further their petition for holidays. At Allahabad, the Senate of the University have for the past few years deferred the spring examination on account of plague, and the students have yearly doubts as to whether or not the spring examinations are really to come off. It would surely be better to definitely announce that until further notice the university examinations are to be held in the summer, when plague is less dreaded.

Reviews.

A Manual of Surgical Diagnosis, By James Berry, F.R.C.S. London: J. and A. Churchill, 1904.

Before starting for the Tropics see that this excellent manual is amongst your stock of books.

Trypanosomes et Trypanosomiases. By A. Laveran and F. Mesnil. Paris: Masson.

This comprehensive work deals with all that is known on the subject at the present time, and is a notable addition to the excellent publications of these distinguished authors. The chapter devoted to the technique of clinical investigation is characterised by an account of the best methods of investigating the parasites with, as well as without, staining, by culture and inoculation.

The trypanosomes known to occur in all branches of the animal kingdom, including birds and fishes, are dealt with, including their geographical distribution. As a result the work is an indispensable adjunct to veterinary works in all countries.

The part describing the parasites in man includes the symptoms they produce, diagnosis and prognosis. As to treatment, unfortunately nothing is of use except to place the patient in the best condition to maintain the general health.

Considering the extensive ravages of sleeping sickness, its protracted incubation, no efforts should be spared to prevent it. Bearing in mind its rapid spread under British rule—if, indeed, its spread is not a result of British rule, as in Uganda—the prevention of trypanosomiasis demands further consideration at the hands of those answerable for the government of our colonies. By no means the least pleasant feature of the book is the generous credit given to British workers in this important subject.

The study of this work is a pleasure in store for all practitioners in districts where trypanosomes exist, and a duty incumbent on all engaged in pathological work.

Considering the seriousness of trypanosomiasis, one may be excused for throwing out a suggested line of investigation. Injections of normal human serum have been made into animals infected with trypanosomiasis, but not injections of syphilitic serum. What are the effects of syphilis and trypanosomiasis in the same subject?

T. P. B.

Impaludismo. By Dr. Francisco Fajardo. Imprensa Nacional, Rio de Janeiro.

Francisco deals briefly but clearly with the various aspects of malaria, both acute and chronic, with their pathology.

The part dealing with mosquitoes is an epitome of the most recent literature, and contains excellent illustrations from Low, Theobald, and others; in fact, the illustrations are a marked feature of the work, which compares favourably with those printed in Europe.

The part dealing with intercurrent diseases is of supreme interest, especially the combinations of typhoid and malaria, and malaria and beri-beri, for the experience of the Brazilian physicians is instructive from their experience of acute beri-beri in a country where rice is rarely used. Other combinations which vitally affect the prognosis in malarial districts are fully described. On the subject of diagnosis and treatment many useful hints are given, reliance being placed on hypodermic or intravenous injections of quinine.

The temperature charts of tuberculosis and influenza show the possibilities of mistaking these diseases for malaria.

The work is one of the most practical manuals on malaria to be found in any language, and will be of material assistance to Portuguese-speaking physicians in Europe, in the Portuguese colonies of Africa and India, as well as in Brazil.

T. P. B.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Yellow Fever.

Panama.—Seven cases of yellow fever were reported from the Panama district in December, 1904, and three cases occurred between January 1st and 10th, 1905.

Mexico.—The President of the Superior Board of Health of Mexico announces that, as a result of the campaign against yellow fever, there is not a single case in the country at present.

United States of America.

On the arrival of the steamer *Abby Palmer* at Marcus Hook on January 8th from the Hawaiian Islands, two members of the crew, an Englishman and a Swede, were found suffering from beri-beri.

Plague.

PREVALENCE OF THE DISEASE.

India.—During the weeks ending January 7th, 14th, 21st and 28th, the deaths from plague numbered 24,385, 24,385, 28,104 and 33,087, respectively.

South Africa: Port Elizabeth.—Weeks ending January 7th, 14th, 21st and 28th, fresh cases 0, 1, 0 and 0; deaths 0, 1, 0 and 0. *East London.*—Fresh cases 7, 1, 0 and 0; deaths 3, 2, 0 and 0.

Mauritius.—During the weeks ending January 26th and February 2nd, 9th and 16th, fresh cases 8, 9, 5 and 6; deaths 6, 7, 2 and 5.

Hong Kong.—During the weeks ending January 21st, 28th, February 4th, 11th and 18th, fresh cases 3, 3, 4, 5 and 2; deaths 3, 3, 4, 3 and 2.

Russia: Province of Viatka.—Between January 5th and 11th, 14 cases.

Siam: Bangkok.—Up to February 3rd, deaths amongst Indians 12, amongst Siamese several deaths.

Burmah: Rangoon.—On February 11th, 4 cases reported.

Aden.—During the week ending January 21st, fresh cases 110; deaths 83.

Egypt: Suez.—During the week ending January 28th, fresh cases 2.

British East Africa: Port Florence.—During week ending January 12th, fresh cases 9; deaths 8.

England: Liverpool.—On board s.s. *Crewe Hall*, Lascar died on January 31st.

Australia: New South Wales.—In a district 300 to 400 miles up the Clarence River from Sydney, 2 deaths from plague occurred during first week of January.

Queensland: Brisbane.—January 2nd, 1905, 1 death from plague; previous death occurred September 15th, 1904.

Formosa.—During November, 1904, fresh cases 81; deaths 76.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"British Medical Journal," February 11, 1905.

1. On the Pathology and Treatment of Leprosy. By Captain E. R. Rost, I.M.S., Resident Medical Officer General Hospital, Rangoon.

2. The Cultivation of Liquorice in Mesopotamia.

(1) Rost, in a paper read before the Burmah Branch of the British Medical Association and published in the *Indian Medical Gazette* for May and June, 1904, states that in August, 1903, he succeeded in cultivating the leper bacillus rapidly. He found that the presence of sodium chloride in the cultivation medium prevented the growth of the tubercle and leper bacillus, and he therefore prepared a medium by distilling beef extract, in which both bacilli grew readily. This nutrient material was further improved by passing a current of superheated steam from the autoclave on a boiling beef extract, and still further improved by pressing superheated steam over the beef extract soaked in pumice-stone in bottles inside the autoclave. In this medium the tubercle bacillus grew in from one to three days, and the leprosy bacillus in from three to five days. To obtain a solid medium in which to cultivate the bacillus, Rost, by dialysing nutrient agar in frequently changed warm distilled agar, obtained a nutrient agar entirely free from sodium chloride.

In the manufacture of the toxin of the *Bacillus leprae*, named by Rost leprolin, the original method described by Koch for tuberculin was followed, except that Rost did not sterilise the cultures at all. Leprolin is being employed in the treatment of leprosy in some thirty different places in India. The local and general signs and symptoms caused by leprolin injections closely resemble tuberclin injections. Great improvement in the condition of the leper resulted from the use of leprolin. Two views as to the manner in which leprolin may act are quoted by Rost. One is the autotoxic view, which claims that all cultures of bacteria eventually die out by poisoning themselves by their own excreta; the other the antautotoxic theory, which presumes that, if a bacterial poison is injected into the body, the body reacts to it in such a way that an antitoxin is eventually formed in the body which acts as an antitoxin and kills off the bacilli. In the latter instance the leprolin serves as an antitoxin, and acts as an antidote to the bacilli and their poisons.

"Medical Record," January 7, 1905.

Spleenless Men. By J. H. Carstens.

Carstens considers that the chief indications for complete removal of the spleen—splenectomy—are: (1) Splenic anæmia, so-called; (2) injury; (3) malignant disease. He reports two splenectomies, one for splenic anæmia and one for sarcoma: both patients recovered. Spleenless men can live in perfect health; no changes in the blood seem to result from removal of the organ.

"Lancet," February 18, 1905.

1. Sabouard's Method of Ringworm Treatment. By J. L. Bunch.

2. The Indian Medical Service. Editorial.

(1) Bunch relates the plan of treatment he has observed at the Hopital Saint-Louis in Paris by Sabouard. The great difficulty hitherto in treating ringworm by X-rays has been the destruction of the brain and injury to scalp during the treatment. This is now guarded against by Sabouard's method. The apparatus employed is an electric current, constant and alternating, and a Crookes tube. The electric energy can be derived from a static machine, a Ruhmkorff cell, or a transformer; the Crookes tube may be of any pattern or any age. The "hardness" and "softness" of the tube may be provided for by a modification of Villar's method.

The quantity of the X-rays generated in a given time is estimated by the use of paper covered with an

emulsion of platino-cyanide of barium, which, when placed within the area of the X-rays, changes in tint and indicates, by comparison with a prepared coloured chart, the quantity of X-ray present. To cure a patch of ringworm it must be exposed at a distance of fifteen centimetres from the Crookes-Villars tube. After the seventh day local changes occur; on the fifteenth day and onwards the hairs fall out, and new healthy hairs succeed.

(2) The Indian Medical Service is made the subject of an editorial, and it is plain that the whole subject of the relation of British and native practitioners of medicine in India will become acute at no distant period.

The editorial states that, "It goes without saying that Europeans serving in India will always prefer medical men of their own race." Any one who knows medical life in our Colonies is quite well aware that medical men of their own race are not always preferred by British residents. We know several excellent practitioners of Asiatic origin who attend upon European families in our Colonies. We find no fault with this, it makes for unity of empire; but it is a fact that the officers of the Indian Medical Service have to bear in mind.

"The Australian Medical Gazette," January 20, 1905.

1. The Summer Diarrhœa of Children. By W. Morrison, M.D.

2. The Relation of Shiga's Bacillus to the Summer Diarrhœa of Infants. By W. F. Litchfield, M.B., and P. L. Hipsley, M.B.

(1) Morrison, after referring to the prevalence of summer diarrhœa amongst children in Australia, classifies the ailments into the catarrhal and the inflammatory or dysenteric types. The etiological factors are dentition, diet and atmospheric conditions. Treatment, Morrison discusses under three heads: (*a*) Dietetic. Milk is to be stopped, and weak mutton broth, barley water, white of egg, sherry, whey, thin arrowroot, fresh meat-juice, and shredded raw meat do good. (*b*) General. Warm compresses to the abdomen, warm baths and Dover's powder are recommended. (*c*) Medicinal. Calomel in repeated doses and castor oil are to be given at first, followed by salol, liquor hydrargyri perchlor., or occasionally carbolic acid. Salines, with or without rhubarb, Dover's powder or bismuth, and Angier's petroleum emulsion, have in Morrison's practice prove useful.

(2) Litchfield and Hipsley have succeeded in isolating Shiga's bacillus in three cases of diarrhœa in children in Sydney, and obtained a specific agglutination reaction in a number of other cases. The first case in which they isolated the bacillus was in the stools of a child aged nine weeks, in March, 1903.

"Annales de l'Institut Pasteur," January, 1905.

ENDEMIC PLAGUE, CLIMATIC BUBO, AND INFECTIOUS LYMPHANGITIS.

Recent investigators have confirmed the view Dr. Thiroux propounded in 1899 of the identity of these affections, including the white erysipelas of Brazil characterised by swelling of the skin and subcutaneous tissue—a more fatal disease than ordinary erysipelas.

"Le Caducée," February 18, 1905.

TREATMENT OF YELLOW FEVER.

J. Dupuy is in favour of alkaline treatment, which removes the toxins from the liver and kidneys and is of prognostic value; for if the urine becomes alkaline, recovery is practically assured.

Internal treatment: Bicarbonate of soda, 15; sugar, 10; distilled water, 450. Two tablespoonfuls every hour, sweetened with syrup of vanilla, if desired. Vichy water as desired, with or without ice.

External treatment: A six-pint enema of half per cent bicarbonate of soda.

Tepid baths two or four a day, according to the temperature.

If there is vomiting, give fifteen drops of tincture of opium in three or four divided doses in an effervescing mixture, while continuing the ordinary treatment.

"Le Caducée," January 21, 1905.

Les Infirmeries indigenes en Algérie (Native Hospitals in Algeria). By Granju.

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T. P. B.

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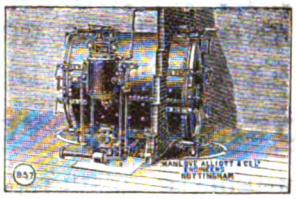
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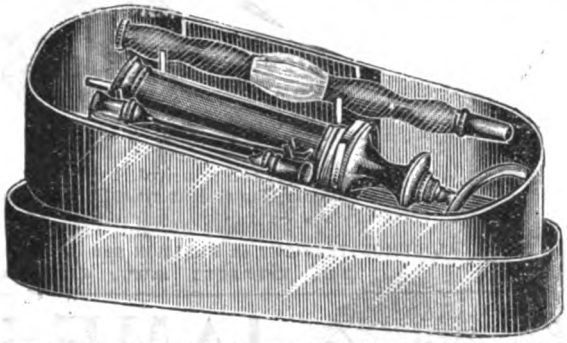
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Arif Hussein, December, 1903.
Photograph taken on admission to Hospital.

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Bacteriology. — The *Streptothrix maduræ* appears under the microscope as a mass of branching filaments, the ends of the filaments being frequently thickened; it stains readily with aniline colours, and retains its colour with Gram's stain.



Photograph taken at Kophinon on May 24, 1904, showing condition of diseased foot.

The greatest difficulty is frequently experienced in obtaining the streptothrix in *pure* culture, but I was fortunate enough to be successful in this. On nutrient agar-agar from the fish-roe granules a luxuriant growth was obtained. At first this was of a dull white colour, and appeared only after seven days' incubation at 37° C.; the growth was opaque, firmly adherent to the surface of the medium, and composed of a large number of rough, limpet-shaped projections. On the thirteenth day of incubation the colour changed to pale pink, deepening gradually, until by the eighteenth day it had become a dull red-pink (smoked salmon tint), which colour the growth still, six months after inoculation, retains. Subcultures made on nutrient agar-agar showed similar growths, except that the red colour was not apparent; film preparations, however, of the original culture and of subcultures showed no morpho-

logical difference between them. This growth on agar is similar to that described by Vincent (who grew the parasite from a case of the disease in Algiers), and by Boyce and Surveyor, except that the latter describes the growth as dull white only.

On gelatine and on glucose glycerine gelatine media the streptothrix did not flourish; the minute granules inoculated appeared to increase on the surface, causing a slight projection, but not spreading on the surface of the media. The bouillon cultivation became contaminated, and so the results are not available.

Conclusion.—The patient left for his village as soon as his period of imprisonment was completed. I was anxious to try the effect of prolonged exhibition of potassium iodide, though it appeared probable that only the radical cure of amputation would have any result.

This case is of very special interest as showing that the infection occurred in Cyprus, the patient never having been out of the island, and also as showing how correct was the surmise of Manson and Daniels that further examination would prove the much wider prevalence of the disease than that usually quoted. The absence of other cases in Cyprus shows the disease to be of great rarity in the island, though perhaps further search, *and microscopical examination*, may reveal additional instances of its existance.

The photographs show the appearance well.

ENDEMIC ENLARGEMENT OF OS CALCIS. PREVALENCE IN FORMOSA.

Operations for Relief.

By James L. Maxwell, M.D.Lond.
Tainan Mission Hospital, Formosa.

[Addressed in the form of a letter to the Editors.]

I have read with great interest the article in the November 1st, 1904, number of the Journal of Tropical Medicine, entitled, "On an Endemic Form of Enlargement of the Os Calcis."

My interest in it is due to the fact that a disease of somewhat similar nature, though of a much milder and more chronic type, seems to exist in the Island of Formosa.

The disease is rare—I have only seen six cases in all; but it occurs, I am told, in the central part of the island as well as the south, where I am stationed. The essential features consist in:—

(1) Slight enlargement of the posterior third of the os calcis. The enlargement, though slight, is quite unmistakable.

(2) Constant pain of a dull nature increased by pressure and by movement.

(3) Its occurrence in young males. All my cases have been in lads from 20 to 25 years of age.

The disease is essentially chronic in its nature, and has no acute onset such as Dr. Maclean mentions in the cases he describes.

The cases seem to be quite unbenefited by the exhibition of drugs such as pot. iodide, sodium salicylate, &c., &c., and, as far as I have seen, show little tendency to spontaneous cure. I mean, not that the os calcis goes on enlarging, but that the pain seems to get little better. Of course I saw the cases for a few months only, as, finding that I was able to do little good to them, they ceased to come for medicine.

There was no history of syphilis in any case.

Of the six cases, five were afflicted in both feet, one on one side only.

Two of the cases I took into hospital to see if further treatment would benefit them.

In the case of one I cut down on the heel from the outer side and divided the periosteum freely, thinking that the cause might be a little chronic periostitis. The wound healed at once, and the patient thought the pain was a little easier, but did not press for an operation on the other foot, so I considered that the treatment must have done very little good.

The other case was the severest I have seen—a young man of 23, who was practically incapacitated from work by pain and difficulty in walking.

After some weeks in hospital without any benefit whatever, I cut down as before on the outer side of the heel, and drove a ¼-inch trephine through the bone to the inside, removing the disc separated. The treatment seemed to act like magic, the pain disappeared from the heel, and from the very next day the lad began to entreat me to do the other foot. When the one was quite healed I operated on the other in the same way, and though the result was not quite so striking in the second foot as in the first, still it afforded the patient great relief. He came up to see me in the out-patient room for six months after, gradually regaining the power to walk about with complete comfort, and then I lost sight of him.

I might add that the patients themselves could never suggest any cause for the onset of the pain, which, indeed, they were never able to date exactly, it seemed to come on so gradually.

January 30, 1905.

MEASLES EPIDEMIC IN FIJI DURING 1903.

(Reported in Colonial Reports for 1904.)

By the Hon. G. W. A. Lynch, M.B., B.S.Camb.
Acting Chief Medical Officer.

Origin and Spread.

During the year 1902 there had been in Fiji some cases of German measles, and at one period this disease was mildly epidemic in Suva and other parts of Fiji; there could be no doubt as to the nature of the disease, by reason of its short duration, mildness, and the absence of any symptoms of consequence, or sequelæ. In December, 1902, however, an undoubted case of true measles was brought to the Colony from New Zealand. The patient, a European adult female, was removed to the Colonial Hospital from the steamer, and there completely isolated for the full period. She was admitted to hospital on December 7th, and discharged on February 2nd, when she went to Levuka, her home. There were, so far as can be ascertained, no other cases of measles either in Suva or Levuka until February 13th, when a half-caste Fijian woman and child were seen in Suva; these patients both presented a copious measly rash, with high temperature, pains in body and limbs, and cough. It was learnt that, two or three

days before, a child, in a house two doors off, had a similar rash and symptoms. It was inspected, but there were then no signs of illness of any sort about it; it was practically well. On the following day the half-caste and the child were again seen; in both cases the temperature was normal, and the rash practically all gone. The cases were therefore considered to be German measles, similar to those which had occurred in 1902.

Facilities for Spread.

The locality in which these cases were seen is a very crowded one; people of many nationalities live there—Fijians, Samoans, Indians, and a variety of Polynesians and half-castes, with scores of children of these people playing in the street all day; the houses are small, and the people are constantly in and out of each other's houses; it is therefore not to be wondered at that any epidemic disease, once introduced, should spread with great rapidity, especially when the patient or patients, as is usually the case, have been ill for several days before they have sought advice.

No further cases, however, were seen or reported from there at this time, and the next case reported was on February 23rd, when two Fijians were seen in the gaol with apparent measles, and were taken to the Colonial Hospital and there isolated. These Fijians were men who were "indentured" labourers to a planter at Samabula, some four or five miles out of Suva, in gaol for a short period for labour offences. They were admitted to gaol over a week before from the plantation. There is said to have been some sickness on this plantation, which was put down as influenza, of which of late years there is always more or less in Fiji. No medical officer saw the cases, but six men were brought one day at about this time from the plantation to the hospital for inspection, all of whom appeared to be recovering from influenza of a mild type, with slight temperature and slight bronchial symptoms, but in no case was there any rash.

On February 26th the local practitioner at Suva reported two cases to the Chief Medical Officer, and another on February 27th: the cases on February 13th and 23rd had also been reported to him in due course. After February 27th cases began to crop up frequently at the gaol and among the police, mostly among Fijians, day by day, until by March 13th there were twenty-six cases isolated at the hospital, and fifteen cases had been reported from the town of Suva itself.

Dealing with the Epidemic.

On March 13th His Excellency the Governor gave leave to use the buildings of the gaol infirmary for cases of measles, and for a European to be employed to look after them under the direction of the Resident Medical Superintendent of the Colonial Hospital, it having been decided to send convalescents from the hospital there to make room for fresh cases. It was recognised that, if the cases at Samabula had been cases of measles, the epidemic must have had every opportunity of spreading thence inland; for it is a plantation on a main road inland, at which natives were in the habit of constantly stopping to see their friends who were at work; and, moreover, a number of people had been down from the mountain districts of Naitasiri and Colo East to see relatives indentured to this plantation, and had returned to their homes. Circulars were therefore printed and issued to all medical officers, warning them of the outbreak; and notices were sent to the schools in Suva, asking that special observation might be taken in order to pick out cases and report them.

On March 12th a case was reported from the plantation next to the one at Samabula, and information was received then that the disease had "been through" all the labour on the plantation.

On March 13th a special meeting of the Board of Health was held to report the epidemic, and to arrange such special measures as might be deemed requisite; and it was then decided to re-enact the regulations framed in 1898 for the same disease, and to issue the instructions, in English and Fijian, which were at that time issued.

These notices were reprinted and issued in large numbers, and distributed to every portion of the group.

Progress of Epidemic.

The first death was reported on March 5th; it occurred at the Colonial Hospital, and was due to enteritis following measles. The patient was a male adult Fijian. Another death was reported from a plantation at Samabula (a few miles outside Suva), from dysentery; it was not actually reported that the patient had had measles, but it was said generally that all the labour on this plantation had suffered, and he must therefore be included. It was also at about this date reported that, when the people on the plantation adjoining this one were ill, friends from a town on the Rewa River (Lutu) had been staying on the plantation, and had returned to their home, obviously thereby spreading the epidemic to all the inland towns of the Rewa and Colo East.

From this time (middle of March) cases were daily reported, especially from Suva, amongst all races, and from all classes of people; and by March 19th, there being forty-one cases in Suva, all the schools were, by order of the local authority, closed.

Cases now began to be reported from various districts outside Suva, beginning with the Lower Rewa, and gradually spreading to all parts of the delta of that river.

There was extreme pressure at the hospital at this time owing to greatly increased numbers, and also to the fact that the native students or dressers, steward, and some of the nurses became ill, so that an extra nurse was sanctioned by the Governor, and a substitute was engaged to take the place of the steward, who was also employed to look after those people who were sent to the depôt buildings as convalescents. At about this time also in Suva matters were serious owing to the very general nature of the epidemic. The majority of the armed native constables, police, gaol warders, and many of the prisoners were patients in hospital, and the lengthy period of convalescence tended not a little to increase the great inconvenience caused by the universality of the disease.

This extreme pressure lasted for about three weeks, from the third week in March to the end of the first week in April, when some improvement began to be manifest.

Outlying Stations Infected.

On March 25th a report was received of the occurrence of four cases at Lautoka, a large sugar centre at the north-west corner of Viti Levu: the disease appears to have been conveyed thither by natives who went from Kadavu to discharge a steamer there; and at the same time cases were reported from Beqa and Levuka. As it was now evident that the epidemic was general and must travel through the group, it was directed by the Governor that extra medical aid should be obtained without delay, and a cablegram was despatched to Sydney for three emergency medical officers to be sent down by the earliest steamer.

On April 1st reports of the spread of the epidemic to Lau and Cakaudrove were received (these provinces are the furthest off in the group, the latter in its most distant part being 200 miles and upwards from Suva), and increased numbers of cases were daily reported from various parts of the Rewa River from the two medical officers in that district.

Dearth of Medical Men.

The department was at this time short-handed, owing to the absence on leave of the Chief Medical Officer; and another medical officer (Dr. Hall) had just returned to the Colony from short leave, and was at once sent to Beqa, where there was also a native medical practitioner. On his return thence Dr. Hall was sent to the Upper Rewa, to inspect and report, and also to the assistance of the medical officer at Nubumakita, in Colo, who was reported by telephone to be gravely ill (not of measles). He was found to be so ill that his removal to Suva was absolutely necessary, and his services were therefore lost to the department during this urgent time, for he was, after a stay in the hospital in Suva, obliged to go away on sick leave to Australia.

The Commissioner from Colo East reported that the epidemic had practically "been through" the mountain towns of his district, and had been "mild"; but this opinion must be now regarded as optimistic, in view of subsequent results and figures, the apparent mildness having probably induced much carelessness on the part of the natives, and consequently severity of sequelæ, as will be seen further.

On April 5th two of the emergency medical officers arrived. On April 12th one of them was sent to the Ra Province with drugs, medical comforts, and an interpreter; and the Medical Officer of Ba (Dr. Hall) now returned to his own district. On April 15th the third emergency medical officer arrived, and left next day for Cakaudrove; and on the same day the second, who had been waiting for an opportunity, was sent to Lau.

His Excellency also about this time approved of the employment of a European resident of the Province of Tailevu, who had some knowledge of sickness, to look after the natives of that province; and at the same time two senior students were sent from the hospital, after recovery from measles, to look after natives, one in the Viria district on the Rewa, and the other to Navua for Namosi, a mountain province mainly.

Subsidence of Epidemic.

In Suva the epidemic was by this time (end of April) beginning to slacken, though reports from outside showed that it was still very severe in various parts. The medical officer sent to Ra returned to Suava on May 3rd, reporting that the epidemic was practically over there, and had been mild; but the same remark applies to this report as that herein made in relation to the report by the Commissioner of Colo East.

On May 4th the schools in Suva were reopened. Large numbers of cases were daily reported from all outside districts, with, in many cases, reports of deaths; but it is apparent that the reports were not at this time accurate, as will be seen on reference to the summary and table attached hereto.

The native assistant sent to Viria returned to Suva on May 11th, reporting that cases were doing well, and that instructions were being followed; and at the same time reports to much the same effect were received from the European emergency medical officer sent to Cakaudrove, and from the Provincial Inspector in that province.

Another native assistant (Manueli) was at about this time sent to Navua to look after the people of Deuba and Serua.

By May 18th very few cases were being reported from Suva; the hospital was very clear, only some eight or nine cases remaining there. While declining, however, in Suva and the parts around, outside reports were still of the spread to the furthest parts of the group, until there remained no district or village even in the remotest islands through which the epidemic had not spread.

On June 21st the Colonial Hospital was reported clear, and no cases had been reported in Suva since June 15th, and there was evidence then of a fairly rapid decline in most parts. The last case absolutely in Suva was reported on July 19th, and with gradual tailing off the last case from outside was reported on September 6th, since which date no cases have been reported.

The height of the epidemic, then, was during March, April, May, and June, of which March and April were the most serious months for Suva and the surrounding parts; while from April to June the outside districts suffered most severely.

Features of the Illness.

Type of Disease and Complications.—The type of the disease was on the whole fairly severe, more especially in the cases of adults. Children as a whole may be said to have suffered mildly, adults as a whole suffered severely—that is, as regards the disease itself. Many cases were returned as having had very high temperatures, up to 106° F., and the rashes seen were, even on the very dark skins, exceedingly well marked, sometimes petechial, and even almost purpuric, and persisting for many days after the fall of the temperature to normal. The native patients, even when closely looked after in hospital, suffered very severely from debility of a prolonged and severe type. Lung complications were comparatively infrequent; they occurred, of course, in all forms, but not nearly in such large numbers as

might have been expected in so widespread an epidemic. This comparative absence is no doubt due to the tropical climate. Patients, however, with incipient tubercular disease of lungs were found to have had their malady much advanced, even to a rapidly fatal issue.

Among other complications which caused trouble were severe and prolonged vomiting and acute mania; one patient was admitted maniacal and died, his mania having begun with the fall of his temperature.

Enteritis.

The complications most frequently met with, and which were most serious and fatal, were enteritis and dysentery. Of these two the former was the more dangerous, and in the rapidity of its fatal issue in some cases absolutely appalling. Specific instances of this trouble will be found below, and everything goes to show that with native races, at any rate, it is the main sequela to be dreaded in Fiji.

Enteritis arises after the chief symptoms of the disease itself have practically ceased, and is, as a rule, brought about by indiscretion in diet. The form which it takes is extremely severe, patients being rapidly reduced to a condition of absolute collapse like that seen in cholera, with profuse watery diarrhœa, acute abdominal pain and tenderness, sunken cheeks, subnormal temperature, thirst, cramps, sighing respiration, clammy sweats, pulses very small and rapid, and soon running. The voice soon becomes a husky whisper, or is even entirely lost; there is no loss of consciousness, but a feeling and appearance of extreme anxiety, which, with the pinched and drawn expression, make up a picture which is sufficiently impressive. All these grave symptoms arose and were at their height in the course of a very few hours, and unless treated with great energy were speedily fatal. They may have begun within twenty-four hours of the fall of temperature to normal, or in some cases may have been delayed as long as six days after this event, when the patient had been regarded as practically convalescent. The dysentery also was of a very acute type, and was responsible for very many deaths; it, too, was in the main brought about by indiscretions in diet.

Mortality amongst Natives.

Folly and Obstinacy of Natives—Whereas no record has come to hand of a single European death from the epidemic, the table appended will show how enormous is the number of deaths among the natives; and this result is in a very large measure due to the obstinacy and folly, not ignorance, of the people; for, as has been noted above, very minute and special instructions were most widely circulated to every village in the group, and there can be no doubt that they were read, for in very many instances the thanks of the people were received for the printed papers, and at the same time it was reported that but for these papers the mortality must have been far higher. In addition, the people were specially visited by all the medical officers and the emergency medical officers, and the provincial inspectors and stipendiary magistrates, and all Europeans who came in contact with them, particularly the missionaries, both Roman Catholic and Wesleyan, both of which bodies did much good by their ministrations. But in spite of this, it is reported in every return sent in how the neglect of people to rigidly adhere to advice caused numberless deaths. An instance from the returns of the Colonial Hospital may be taken as a fair type of what occurred elsewhere. A Fijian who had got over his measles, and was being kept in hospital during convalescence on light diet, became tired of the restraint, and broke out of hospital one night, when, betaking himself to Suva, he partook of a feast of tinned salmon, *taro* and *yagona*. He then returned to hospital for the night at 10 p.m., was in the collapse stage by 4 a.m. next morning, and was dead at 6 p.m., in spite of the most assiduous care and nursing. If such a condition of things could occur in the hospital, where all watchfulness and care were exercised, it is practically certain that there must have been very many similar fatalities in the out-districts in villages where, from the nature of things, supervision could not be nearly as close.

This is but one instance of many similar cases reported on all sides, and doubtless there were scores of others unreported, which helped to swell the death-rate to its large proportions. Other signs of callousness and carelessness were reported, such, for instance, as the holding of a "feast" in the village on the arrival there of a supply of medical comforts, sharing out to the inhabitants the supply of arrowroot and milk sent for the use of those who were sick, making use of the printed instructions about the disease, and other instructions as to the proper preparation of arrowroot, as corks for bottles.

All these points go to show how very difficult it is to keep the native population alive to the importance of complications of disease and their dangers.

The death-rate among Fijians in outside districts was 4·12 per cent. of the cases, comparing favourably with the rate in the former epidemic in 1875, which was 28 per cent. The death-rate of the epidemic under consideration is made up from returns forwarded by the heads of districts (Bulis), and this shows a total number of cases of measles of 44,014 Fijians in outside districts, with 1,817 deaths, or 4·12 per cent.

The death-rate among Fijians treated in the Colonial Hospital was 2·20 per cent.; but in regard to these allowance should be made for four cases brought from a distance, who were more or less moribund on admission. The exclusion of these four persons from the computation would reduce the hospital death-rate to to 0·98 per cent., approximating more closely to what one might expect. In this last rate, moreover, is included the case of the man quoted above, who absconded from hospital one night and overfed himhimself, and died of enteritis as a result.

How Europeans Fared.

The record of European cases was 450 adults and children in all parts of Fiji, with no deaths; of other Polynesians (New Hebrides, Solomon Islands, Line Islands), 124 cases, with one death, or 0·80 per cent.; of these very few were treated at the Colonial Hospital, with no deaths.

Of Indians in all parts of Fiji 234 cases occurred,

with two deaths, or 0·85 per cent. Indians have, as a rule, had measles before coming to Fiji, hence the small numbers affected.

TABULATED SUMMARY OF TOTAL NUMBER OF CASES OF MEASLES REPORTED, WITH NUMBERS OF DEATHS AND DEATHS PERCENTAGE OF CASES.

POPULATION, 90,006.

PROVINCE	TOTAL CASES			DEATHS			Percentage of deaths to cases
	Males	Females	Total	Males	Females	Total	
Ba and Yasawas	2,483	2,256	4,739	87	86	173	3·65
Bua ..	882	871	1,753	29	28	57	3·25
Cakaudrove ..	1,927	2,026	3,953	54	60	114	2·88
Colo East ..	973	913	1,886	72	54	126	6·68
Colo North ..	909	920	1,829	33	28	61	3·33
Colo West ..	1,160	1,112	2,272	71	70	141	6·20
Kadavu ..	1,649	1,587	3,236	90	80	170	5·25
Lau	1,799	1,726	3,525	68	57	125	3·54
Lomai Viti ..	1,232	1,124	2,356	48	56	104	4·41
Macuata ..	1,073	1,002	2,075	25	28	53	2·55
Nadroga ..	995	936	1,931	57	48	105	5·43
Naitasiri ..	798	772	1,565	34	46	80	5·11
Namosi ..	455	418	873	6	8	14	1·60
Ra	1,786	1,632	3,418	79	84	163	4·76
Rewa	951	1,370	2,321	43	44	87	3·74
Serua	438	456	894	20	20	40	4·47
Tailevu	2,787	2,601	5,388	110	94	204	3·78
Total Fijians in Provinces ..	22,292	21,722	44,014	926	891	1,817	4·12
Fijians in Colonial Hospital	—	—	305	—	7	7	2·29
Fijians in Colonial Hospital and Suva ..	339	32	371	—	8	8	2·15
Europeans in Hospital and Suva	135	143	278	—	—	—	—
Europeans in out-districts	104	68	172	—	—	—	—
Polynesians (all)	89	35	124	—	1	1	·80
Indians (all) ..	163	71	234	1	1	2	·85
Miscellaneous (all)	158	147	305	2	2	4	1·31
Grand Total ..	23,280	22,218	45,498	929	903	1,832	4·02

NATIVE POPULATION OF FIJI ON DECEMBER 31ST, 1902; WITH DEATHS FROM ALL CAUSES, AND DEATHS FROM MEASLES IN EACH PROVINCE.

Province	Population	Deaths from all causes	Deaths from measles
Ba and Yasawas	9,196	565	173
*Bua	4,242	272	57
Cakaudrove	8,009	489	104
Colo East	3,696	271	126
Colo North	2,979	169	61
Colo West	4,630	343	141
Kadavu	6,821	388	170
Lau	6,709	429	125
Lomai Viti	5,817	429	104
*Macuata	4,744	261	53
Nadroga	4,293	304	105
Naitasiri...	2,981	195	80
Namosi	1,359	99	14
Ra	6,978	481	163
Rewa	4,842	244	87
Serua	1,864	164	40
Tailevu	10,846	622	204
Total ...	90,006	5,725	1,942

* Returns of measles cases and deaths from these provinces are incomplete.

The deaths were from broncho-pneumonia in both cases, and the cases were for the most part in children. There is, however, no doubt that many Indian cases in free Indian settlements were not reported.

Of miscellaneous population, chiefly half-castes of all sorts, and Samoans, 305 cases occurred, with four deaths, or 1·31 per cent.

TOTAL CASES OF DEATHS.

A grand total of 45,498 cases of all races, with 1,832 deaths, or 4·02 per cent.; that is, 44,385 Fijians, with 1,825 deaths, or 4·11 per cent., and 1,113 others, with seven deaths, or 0·62 per cent.

It is unfortunate for statistical purposes that returns were not kept of the ages of those affected, for then the death-rates would have been of more value; but it was found impossible to get these returns complete, hence the numbers have to be massed together indiscriminately.

The native Fijian population on December 31st, 1902, was 90,006,[1] of whom nearly 50 per cent. were affected, the remainder being probably those who had suffered from the disease nearly thirty years ago. The number of deaths of Fijians from all causes in 1903 was 5,725, or 6·34 per cent.; of these deaths 1,825 are ascribed to measles and its sequelæ. The epidemic, therefore, raised the native death-rate by 2·23 per cent.

HOW THE EPIDEMIC WAS DEALT WITH.

The steps taken to deal with the epidemic may be summarised briefly. The difficulty in checking it when once started will be apparent when it is remembered that this Colony consists of a group of scattered islands, between which there is constant communication by steamers, boats, and cutters, and the fact that when the epidemic was well started in Suva one, if not more, chiefs recalled all the people of their districts from Suva, thereby materially helping to carry the infection far and wide.

The issue of circulars in Fijian to all parts and of instructions to all Europeans was, in most cases, recognised as a valuable help. All the medical officers, stipendiary magistrates, provincial inspectors, native medical practitioners, missionaries, and other Europeans, were energetic in visiting villages and giving advice, and it is perhaps due to this universal visiting of towns that there was never at any time anything like a panic amongst the natives; and, with the aid of three extra medical officers temporarily employed in different parts of the group, good was probably done.

Large stocks of arrowroot and condensed milk were supplied to medical officers and stipendiary magistrates for distribution as need arose, and a vast quantity of drugs were sent out in concentrated form for distribution for cases in which they were needed. In view of the care that was taken on all sides to help the people by actual medical aid when possible, and by instructions when they could not be personally got at, the large mortality is very disappointing; and it can only be said that, looking to the many instances

[1] Exclusive of 3,378 others who were serving on plantations or mission stations under European control.

of fatal issue due to absolute carelessness that have come under observation, and the (probably) hundreds of others that were not reported, the native Fijians may be considered fortunate to have escaped even as they did.

Two tables are appended to show pecrentages and numbers affected in summary form.

LEUCOCYTE COUNT IN SPLENIC ABSCESS.

By PERCY N. GERRARD, M.D.DUBL., D.T.M.H.CANTAB.

[Addressed in the form of a letter to the Editors].

I APPEND a partial relative leucocyte count (eosinophiles, large mononuclears, and transitionals excluded), which I made recently in the process of diagnosis of a splenic abscess.

The count having been made simply to ascertain the predominance or otherwise of the polymorphonuclears I simply counted them against the lymphocytes.

The result is interesting as tending to prove that, if the count of 200 is at all "well done," it ought to suffice in the majority of cases to prove or disprove the presence of pus.

First count, 200 only	Polys, 153=76·5 per cent. Lymphs, 47=23·5 per cent.
Second count, 200 only (same slide)	Polys, 152=76·7 per cent. Lymphs, 48=23·5 per cent.
First and second count combined	Polys, 305=76·25 per cent. Lymphs, 95=23·75 per cent.
Third count, 200 only	Polys, 150=75 per cent. Lymphs, 50=25 per cent.
First, second and third count combined — 600 cells	Polys, 455=75·83 per cent. Lymphs, 145=24·18 per cent

May I suggest that in slides where the cells are uniformly numerous, a count of 300 is as useful as one of 500, and the time saved is, of course, 3 : 5.

NO MALARIA IN SEYCHELLES.

By ROBERT DENMAN, M.R.C.S.
Chief Medical Officer, Seychelles.

[Addressed in the form of a letter to the Editors.]

I SEE that in your leading article in the JOURNAL OF TROPICAL MEDICINE for December 1st, 1905, you say that Fiji and Turk's Island are the only two colonies from which no cases of malaria are reported. This may be literally true, but if it be taken to mean that no other colonies enjoy immunity from malaria it is misleading.

I have been eleven years in the Seychelles, and for nine of the eleven years I have been Chief Medical Officer, and I have never seen or had brought to my notice a case of malaria which originated in these islands. The cases reported are imported ones from Mauritius or East Africa.

Another point of interest, which I put down to our geographical position (roughly a thousand miles from anywhere), is that the Anopheles mosquito does not exist in these islands.

Our immunity from malaria is well known to our neighbours, and we get cases of malaria sent to us for treatment, and they all do remarkably well, probably having one severe relapse soon after they are in, and no other as long as they stay here.

How long this happy state of affairs will last it is impossible to say.

We have cases of malaria, and we have an increasing number of insanitary Indian coolies. Let one of these import a lusty family of Anopheles, and the circle is complete, and we will no longer be able to boast of one of the lowest death-rates in the Tropics.

Gazette des Hopitaux, February 4, 1905.

Tropical Enterocolitis. Sprue. By M. A. Thiroux.

This condition is often a sequela of malaria. There is constipation alternating with diarrhœa and the passage of pseudo-membranes, sometimes of blood. The first part of the motions may be solid, the last soft, as if cream had been poured over them; they contain undigested food, unaltered vegetable matter, muscle fibres, and fat. They are as thin as a finger, from spasm of the bowel or thickening of its wall or true narrowing. Piles are often found.

Post mortem.—The large intestines are hard, thick, cord-like, only admitting a pencil.

Gastric disturbance is usual, with pain in the right side and shoulder, resembling the pain of hepatic congestion and abscess; this is due to distention with gas of ascending and transverse colon. The liver, even if enlarged at first, soon atrophies, and is never fatty; there is a deficiency of bile in the fæces, resulting in intestinal fermentation with formation of toxins, which in turn act on the liver, so that a vicious circle is set up.

Aphthous patches or molar ulcers form in the mouth, especially near the frænum. They may be diagnosed as syphilitic with disastrous result, as these patients are seriously affected by mercury, and in the Tropics syphilis should never be diagnosed from the tongue alone. Neurasthenia and mental trouble are usual, so common that bowel trouble should be excluded before giving bromides.

Treatment.—Enemas are of use as a preliminary of treatment. Constipation should be treated by diet of a mixed nature, red meat, not white, as it contains little nutriment; well-cooked vegetables, avoiding those of a bulky nature, as cabbages. Avoid sauces and pickles, pastry, and above all fat, which in cooking should be replaced by butter. From its containing fat, patients seldom tolerate milk.

Coffee well mixed with chicory is the best drink; wine, beer, and spirits forbidden, as also smoking.

Hydrotherapy is of service, especially the horizontal douche; or the Scotch bath, alternate douching with hot and cold water.

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THE

Journal of Tropical Medicine

MARCH 15, 1905.

MACLEAN-MAXWELL DISEASE.

THE article in the present issue by Dr. James L. Maxwell, of Formosa, confirms the observations published in this Journal "On an Endemic Form of Enlargement of the Os Calcis," by Dr. C. M. MacLean, on November 1st, 1904. Dr. MacLean's experience in the disease was gathered at Kaziankor, on the Gold Coast, West Africa, where he found a number of cases of peculiar enlargement of the os calcis. The disease in West Africa was seen amongst Fantis and Kroos working in the mines. A photograph of the heels of some patients was given in the JOURNAL OF TROPICAL MEDICINE for December 1st, 1904, but it is difficult to convey adequately by photograph so limited a change in size as that due to this condition.

The accounts given by Drs. MacLean and Maxwell, although made from observations so far apart as the Gold Coast of West Africa and Formosa, in the China Seas, seem to point to identical conditions. MacLean describes a preliminary febrile state which Maxwell states he has not met with, a difference in clinical experience due in all probability merely to the time the patients came under observation.

Men working in the mines are more or less constantly under the eye of the medical officer, whereas Dr. Maxwell's cases were from districts at some distance from the hospital.

The seat of enlargement in the os calcis is described by MacLean as affecting the external aspect of the bone. Maxwell gives it as the posterior third of the os calcis, but from the fact that whilst operating he dealt with the outer aspect of the bone it is to be inferred that the chief change in the tissue was in Maxwell's as in MacLean's cases, in the outer aspect.

The ages of the patients on the West Coast were, with one exception, young men between 13 and 30; in Formosa the patients were men between 20 and 25.

The one exception mentioned by Dr. MacLean was that of a man between 40 and 50 years of age, and in him the outgrowth had attained much larger proportions than in any of the younger men, indicating probably that, with extended observations, the change in the os calcis may be proved to be that of chronic enlargement and of an outgrowth larger than hitherto recorded.

Dr. Maxwell's operations for the relief of the disease are the first recorded attempts to deal with the ailment surgically. He very properly commenced by raising the periosteum over the thickened patch, and encouraged by the partial success obtained, he, in a subsequent case, with commendable surgical acumen, drilled a hole right through the bone. The latter mode of treatment promises to be the classic treatment for this interesting condition of bone, and Dr. Maxwell is to be congratulated on the initiation.

The pathology of the complaint is still in abeyance; but it would appear to be either inflammatory in origin, or of the nature of an osteoporosis or rarefaction of bone succeeded by some inflammatory change, which gradually becomes chronic and leaves a permanent thickening of the bone.

No. 5.—CYPRUS.

RETURN OF DISEASES IN 1903 FROM SIX DISTRICT DISPENSARIES AND EIGHT RURAL DIVISIONS.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	—	—	4
Anæmia	—	—	506
Anthrax	—	—	2
Beri-beri	—	—	—
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	—	—	1249
Delirium Tremens	—	—	3
Dengue	—	—	—
Diabetes Mellitus	—	—	8
Diabetes Insipidus	—	—	3
Diphtheria	—	—	9
Dysentery	—	—	261
Enteric Fever	—	—	173
Erysipelas	—	—	87
Febricula	—	—	482
Filariasis	—	—	—
Gonorrhœa	—	—	366
Gout	—	—	13
Hydrophobia	—	—	—
Influenza	—	—	1776
Kala-Azar	—	—	—
Leprosy—			
(*a*) Nodular	—	—	11
(*b*) Anæsthetic	—	—	12
(*c*) Mixed	—	—	17
Malarial Fever—			
(*a*) Intermittent—			
Quotidian	—	—	1808
Tertian	—	—	720
Quartan	—	—	133
Irregular	—	—	129
Type undiagnosed	—	—	1774
(*b*) Remittent	—	—	1277
(*c*) Pernicious	—	—	38
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	1
Mumps	—	—	102
New Growths—			
Non-malignant	—	—	101
Malignant	—	—	49
Old Age	—	—	—
Other Diseases	—	—	25
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	—	—	1
Rachitis	—	—	—
Rheumatic Fever	—	—	68
Rheumatism	—	—	782
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	—	—	32
Septicæmia	—	—	25
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	—	—	13
Syphilis—			
(*a*) Primary	—	—	303
(*b*) Secondary	—	—	139
(*c*) Tertiary	—	—	—
(*d*) Congenital	—	—	16
Tetanus	—	—	—
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
Other Tubercular Diseases	—	—	179
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	—	—	501
Circulatory System	—	—	202
(*a*) Valvular Disease of Heart	—	—	—
(*b*) Other Diseases	—	—	—
Digestive System—	—	—	4136
(*a*) Diarrhœa	—	—	—
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	—
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	—	—	—
(*g*) Cirrhosis of Liver	—	—	—
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	—	—	—
Ear	—	—	561
Eye	—	—	4486
Generative System—			
Male Organs	—	—	204
Female Organs	—	—	259
Lymphatic System	—	—	475
Nervous System	—	—	1321
Nose	—	—	158
Organs of Locomotion	—	—	208
Respiratory System	—	—	1856
Skin—	—	—	2526
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	—	—	—
(*f*) Other Diseases	—	—	—
Urinary System	—	—	210
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	—	—	1115
Parasites—	—	—	—
Ascaris lumbricoides	—	—	215
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	—	—	16
Surgical Operations—			
Amputations, Major	—	—	—
,, Minor	—	—	—
Other Operations	—		257
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

No. 6.

FEDERATED MALAY STATES.

Medical Report on the State of Pahang for 1903.

By S. LUCY, State Surgeon, Pahang.

In-Patients.

(1) During the year 2,008 patients were treated in the wards of the various hospitals, as compared with 1,894 in the previous year. The admissions at the Bentong Hospital, which numbered 793 as against 421 in 1902, entirely account for the total increase of in-patients; at all other hospitals the numbers have fallen off, particularly is this the case at Raub and Kuala Lipis. The small number of patients seeking admission at these hospitals is attributable to the closing down or great reduction in the labour forces of the more important neighbouring mines, rather than to any betterment of the public health. At Bentong there has been much overcrowding, and the want of accommodation has caused some inconvenience and not a little suffering; numbers of patients were refused admission, and others have been discharged before they were fit to return to work in order to make room for grave cases demanding immediate attention. Increased ward space is being provided.

(2) The mean mortality amongst the in-patients was 11·05 per cent., as against 12·14 per cent. in 1902. The highest death-rate occurred at Bentong—viz., 15·48—but these figures compare very favourably with those of last year, when the death-rate was 25·70 per cent. The serious condition of large numbers of the patients admitted to this hospital may be deduced from the fact that no less than 43 patients died within forty-eight hours of admission. If these are excluded, as they fairly may be in computing the death-rate, the mortality at Bentong is reduced from 15·48 to 10·32. The mean death-rate for all hospitals, exclusive of cases dying within forty-eight hours of admission, was 7·91.

Out-Patients.

(3) Thirteen thousand eight hundred and forty-nine visits were made to the out-patient department during the year; these figures include 8,428 new cases and 5,421 repetitions, as against 7,620 new cases and 4,105 repetitions in 1902.

(4) The Malays are very ready to accept European medicaments and methods of treatment when these are brought to their doors; and, though shy of seeking admission or treatment at the station hospitals, they are eager enough to submit to examination, and will clamour for drugs when a visit is made to their kampongs. Severe forms of skin disease and bowel complaints due to intestinal parasites are very common, and cause much distress and permanent impairment of health to the native children. The majority of these complaints are very amenable to treatment, but it is at present impossible to bring this treatment within easy reach of the widely distributed Malay population of the State.

Prevalent Diseases.

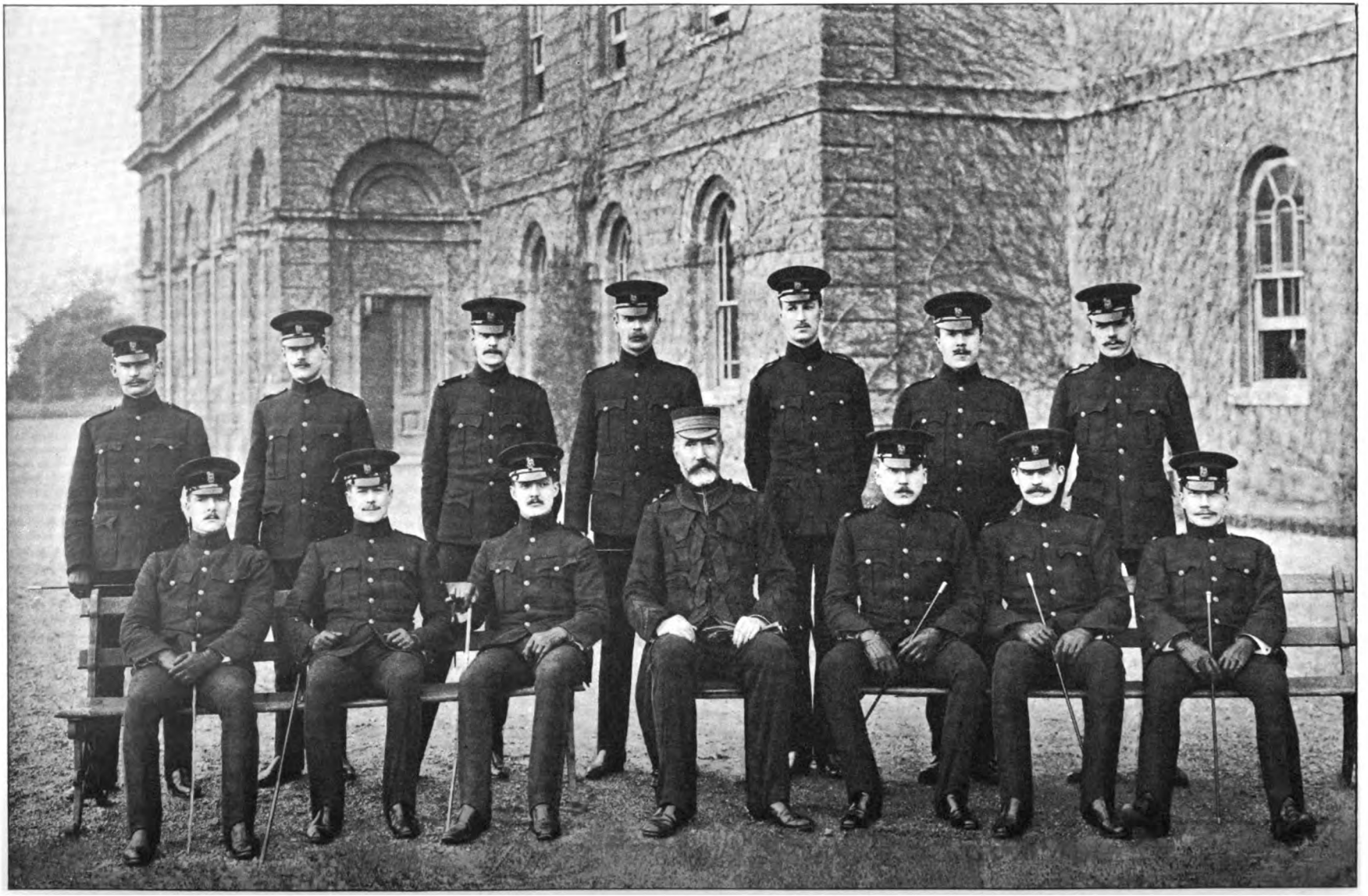
(5) Malarial Fever.—This disease accounts for the greatest number of admissions to the wards; most of the cases are benign in type, and respond readily to treatment; the mortality occurs mainly amongst the chronic malarial cachexias. The intense forms of malignant infection are uncommon; 607 cases of malarial disease, with a mortality of 5·42, points to the conclusion that malaria is not by any means the most formidable of tropical diseases met with in Pahang, though the above figures do not convey a correct impression of the total damage to the general health caused by the malarial parasite, principally for two reasons—firstly, because Malays rarely come for treatment for this disease, they regard two or three attacks of malaria each year as a matter of course and unavoidable; and secondly, because repeated attacks of malaria are common and produce a cachexia which renders the subject particularly liable and non-resistant to any intercurrent disease to which he may fall a victim.

(6) At Lipis the police force has usually suffered somewhat severely from malaria, and during 1902 there were 116 admissions to hospital from the force from that disease. In July last a ration of 5 grains of quinine was given daily, and in August each man was, in addition, provided with a mosquito-net. From January 1st, 1903, to the date upon which the above-mentioned precautions were taken—viz., August 15th—there were 47 admissions for malaria, and from this date to December 31st, 18 only, or a total for the year of 65 as compared with 116 in the preceding year; the strength of the force in the Lipis command being practically the same for both years.

(7) Bowel Complaints.—Dysentery and diarrhœa produce, as usual, a heavy mortality—viz., 235 cases and 67 deaths, as against 241 cases and 57 deaths during 1902. The chronic forms of these diseases are very fatal and difficult of treatment; the native rarely has sufficient sense or power of self-denial to submit to the severe regimen in diet which is indicated in these cases.

(8) Beri-beri.—The case mortality from this complaint is very high, 157 cases and a mortality of 22·22 per cent., as compared with 144 cases and a mortality of 30·35 per cent. in 1902. Of the 35 fatal cases 21 occurred in the Bentong Hospital, which presents a case mortality of 31·81 per cent. from this disease. The cases occur almost entirely amongst the tin-mining population.

Lieutenants of the Indian Medical Service who recently completed a Course of Instruction in the Royal Victoria Hospital, Netley, and the Royal Army Medical College, London.



Front Row:— **Macrae.** **Cameron (1st Montefiore prize).** **Skettle.** **Col. MACLEOD** **Stewart.** **Steel (Martin gold medal).** **Macgregor.**

Back Row:— Wells. Shaw. Proctor. Peebles (Marshall Webb medal). Matson (2nd Montefiore prize). Babington (Maclean prize). Dougan.

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Top Row: .. .. A. de S. M. Leitao, A. E. Couzens, H. Ludovici, R. F. Williams, Dr. Pou (Senior House Surgeon).

Second Row: Major R. Robertson, I.M.S., Major C. Wimberley, I.M.S., G. B. Warren (Laboratory Assistant), Mr. H. C. Staniland Smith, F. B. Thompson, Commander Hodgkinson, R.N. (Member of Committee), R. M. Kalapesi, H. A. Foy, E. J. Minchin.

Third Row: Dr. Hamilton Wright, Miss E. Watts, Mons. Chevasse, Sir John Ardagh, K.C.M.G., Sir Patrick Manson, K.C.M.G. (Lecturer), Miss M. Hayes, Dr. L. W. Sambon (Lecturer), Miss A. Smith, Miss H. Hanson, Dr. G. C, Low (Medical Superintendent).

Fourth Row: .. .. Dr. R. Leiper (Helminthologist), Dr. Wise (Demonstrator), R. van Someren.

Absent: .. .. P. Rattray, Lt.-Col. Mulroney, I.M.S., F. Kugelberg, Capt. C. R. Pearce, I.M.S., R. W. Gray, R. E. Little, E. W. Graham, Miss A. Ramsbottom, T. R. Robertson

LONDON SCHOOL OF TROPICAL MEDICINE. 17th Session. January-April, 1905.

Bale and Danielsson, London.

(9) PHTHISIS, with 48 cases and 20 deaths as compared with 26 cases and 12 deaths last year, would seem to be on the increase. It runs a rapid course in this moist climate, and, once acquired, a fatal termination can be predicted, with the very free ventilation that obtains, at any rate amongst the rural and mining population. I do not believe that any serious spread of the disease need be feared; it is, generally speaking, the opium-sodden Chinaman, who spends most of the day and night in a dark, hot, and ill-ventilated barrack, who contracts and rapidly succumbs to this disease.

INFECTIOUS DISEASES.

(10) No cases of grave infectious diseases were treated at any State hospital during the year; of the main infectious disorders, there were 8 cases of influenza, 1 chicken-pox, and 1 mumps.

(11) Early in the year small-pox appeared nearly simultaneously at the coast districts of Kuantan and Endau. The outbreak at Kuantan was quickly got under, and resulted in 23 cases and 2 deaths. The epidemic at Endau proved more troublesome, and the disease was not stamped out until September; it was of virulent type, and, of the 152 cases that came under treatment, 34 proved fatal.

VACCINATION.

(12) The total number of vaccinations performed during the year amounted to 2,231; of this number 502 were unsuccessful. The majority of these vaccinations were done in the Endau district during the small-pox epidemic, and include re-vaccinations and the inoculation of protected persons. The District Surgeon further accounts for a number of failures to a batch of badly-prepared lymph-tubes. As a rule, the Saigon lymph can be relied upon, and is far more efficient than the English prepared lymph.

An enactment providing for compulsory vaccination is under consideration, and, it is to be hoped, will soon become law. The subjoined table gives the number of vaccinations during the past six years:—

Year.	Vaccinations.
1898	1,364
1899	7,619
1900	3,588
1901	2,874
1902	2,499
1903	2,231

GENERAL.

(13) Through the courtesy of the managers of the mining companies and the medical officers or dressers in charge at Sungei Lembing, Blat and Penjum, I am able to publish the following figures relating to the hospitals or dispensaries at Sungei Lembing, Blat and Penjum:—

	Cases treated, in-patients.	Deaths.	Out-patients.
Pahang Corporation's Hospital at Sungei Lembing... ...	825	127	3,220

(14) At the Blat Mines a hospital was opened early in the year, and a dresser placed in charge. An average daily number of about 25 patients has been maintained.

(15) At the Penjum Dispensary 567 cases received treatment during the year.

(16) A Government hospital is again to be built at Kuantan. It will be commenced, and, it is hoped, completed, before the end of 1904. The mining population in the Blat and Lepar districts is increasing rapidly, large numbers of sinkehs are imported, and these suffer severely from fevers and beri-beri during the wet months of the north-east monsoon.

(17) An enactment to provide means for the prevention of the introduction and spread of contagious and infectious diseases became law in the latter end of the year.

SANITATION.

(18) The sanitary conditions of the townships have not materially altered during the year; some concrete drains have been put in at Raub, and a swamp at Lipis has been partially drained.

(19) The insanitary condition of Bentong village and of some more important works for its improvement has been the subject of a special report to Government.

(20) Raub is the only station at which there is a water supply not obviously liable to sewage contamination.

(21) At Kuala Lipis the European community is still dependent for water for all purposes on the Jelai and Lipis rivers, both of which are the public sewers of the native population.

Medical Report on the State of Negri Sembilan for 1903

By J. SHIPLEY PART, M.D.

Acting State Surgeon.

(1) There has generally been an increase of in-door patients and a decrease in out-door during the year—the total together showing 287 increase in both classes—the relative figures being for 1902, 11,899, and for 1903, 12,186.

(2) The year showed a decreased rainfall with several spells of drought. The diarrhœa and dysentery were about the same as in the previous year.

(3) The usual state of things was observed—namely, that diarrhœa and dysentery were worse in dry weather, tending to disappear on the occurrence of heavy rains.

(4) The diseases showing the largest numbers of admissions are as follows in order of occurrence, the highest being (1) beri-beri, (2) ulcers, (3) fever, (4) dysentery, (5) diarrhœa.

(5) The sanitary conditions are not ideal anywhere, since all excreta is disposed off in the soil, water supply being almost entirely from wells.

In Seremban the drainage system badly wants overhauling in places, but this takes time and is in hand.

(6) Something has been done during the year, but much remains in the way of filling up mining holes, borrow pits, &c., in the neighbourhood of the town. Holes continue to be made wherever roads are built on the flat, and they are not drained.

VACCINATION.

(7) There were 2,373, of which 874 were done in Johol, a sub-district of Kuala Pilah, a collection of kampongs about which more below.

It is exceedingly difficult to obtain proper protection in some districts owing to the ignorance and prejudice of the outlying-kampong Malay, although in other

places quite contiguous they fully appreciate its advantages.

SMALL-POX.

(8) There were four outbreaks of this disease in the State during the year—at Johol 270 cases, Ayer Kuning 49, Rembau 8, Seremban 1 case.

There is one point to which attention should be drawn, and that is an important one in discussing the Johol outbreak—namely, at the commencement in June, it was decided by the Medical Department to isolate cases and contacts, but this was not allowed by the Government, and the Medical Department was instructed to rely solely on vaccination. That this measure when completely carried out will prevent outbreaks is true, but when in a scattered jungle population there is widespread objection to it, this proper carrying out is next to impossible, as many of the people disappear when the vaccination officer appears on the scene. The people wander about from kampong to kampong and so variola is spread broadcast wherever a few cases occur; this cannot be stopped without isolation, and to do so efficiently requires proper buildings with staff.

(9) Diarrhœa and dysentery, the usual scourges of the country, among the Indian population at least, shows no increase, though 797 more in-patients were treated than last year, and this in spite of the large numbers of men imported by the Federated Malay States Railways.

This result I attribute to the greater care exercised in regard to their food supplies and housing, also to the greater promptitude with which they are brought under treatment The mortality in diarrhœa shows a mortality of 28 per cent. as against 42 per cent. for the previous year; dysentery 29 per cent. against 40 per cent. of 1902.

(10) Beri-beri shows an increase of cases (total 1,141) with a mortality of 7·09 per cent. as against 881 cases in 1902, mortality 9·1 per cent.

WORK OF THE DEPARTMENT GENERALLY.

(11) On September 5th the State Surgeon left on long leave, the District Surgeon acting for him, he being relieved by Dr. Milne, an assistant to the Institute for Pathological Research, Federated Malay States.

(12) Every effort was made by the Government during the year to obtain more assistant-surgeons, but without success, and the department is consequently undermanned as usual, there being five vacancies out of six appointments for assistant-surgeons.

(13) The remedy for this is hard to see. To remedy it promptly, the only thing to do appears to be to increase the inducements in the shape of pay, to begin with.

(14) In time it can be done by educating selected boys who should be picked for smartness from the whole F.M.S., and recommended by the school authorities, but if this is to have continued success the allowance $25 per mensem during their college course will have to be increased.

(15) One man sent to India was a married senior dresser of long service, able and trustworthy; he could, of course, not exist on the pittance given him and had to return.

(16) The European and second-class wards were opened in the middle of the year, and 15 patients treated there with one death.

(17) The one nurse we have has been a great boon, and I should like to see another appointed to provide for outside nursing and night work; this would encourage materially the willingness of officers and their families to go into hospital for treatment.

(18) The total number of in-patients treated shows an increase from 4,453 in previous year to 5,250.

(19) There were 29 operations done during the year, including a large proportion of major ones.

TOTAL CASE MORTALITY.

(20) For all hospitals, 7·8 per cent.; the highest being at Tampin and the lowest at Port Dickson. At the Seremban hospital, the gross mortality was 8·1 per cent. and the net (deducting those dying within forty-eight hours) 5·7 per cent.

NATIONALITIES.

(21) Of the in-patients 66 per cent. were Chinese, 23 per cent. were Tamils, 4 per cent. were Malays, 3 per cent. were Sikhs.

PARTICULAR HOSPITALS—SEREMBAN GENERAL AND PAUPER HOSPITALS.

(22) (Admissions 2,771, mortality 8·2 per cent.) An increase of 632 admissions and a decrease of mortality of nearly 50 per cent.

23. Mr. R. Van Geyzel acted as assistant-surgeon during the year.

SEREMBAN GAOL INFIRMARY.

(24) Sickness rate, 74 per mille against 55 last year; mortality of cases treated 5·3 per cent. against 10·8 last year. In all four prisoners died; one from diarrhœa, one dysentery, one pulmonary phthisis and one undiagnosed.

The District Surgeon and a dresser from the pauper hospital visited the infirmary daily.

BERI-BERI HOSPITAL, PORT DICKSON.

(25) (Admissions 263, mortality 4 per cent.) Admissions increased by 40, and a slight increase of mortality, which last year was 3·96 per cent.; 38 per cent. of the deaths in this hospital were from dysentery. Dresser in charge, A. P. Koek.

JELEBU HOSPITAL.

(26) (Admissions 688, mortality 7·9 per cent.) An increase of 105 admissions; and a decrease of mortality, which was 9·64 last year. Dresser in charge, T. Kanapathipillay.

KUALA PILAH HOSPITAL.

(27) (Admissions 626, mortality 8·8 per cent. There has again been a decrease of admissions to this hospital—97 less than last year; and an increase to the mortality, which was 4·83 in 1902. Mr. P. La Brooy acted as assistant-surgeon in charge of this hospital during this year.

TAMPIN HOSPITAL.

(28) (Admissions 492,mortality 9·7 per cent.) There has been an increase of admissions in this hospital by 73. The mortality remains about the same. Mr. H. G. Copcult, assistant-surgeon, was in charge during the year.

PORT DICKSON DISPENSARY.

(29) At this institution 510 cases, including re-visits, were attended to as out-patients against 466 in 1902; and 680 in 1901.

Mr. Cantlie has named the condition the Mac-Lean-Maxwell Disease, and we think the association of the two names quite justified by the important part each has played in drawing the attention of the profession to what we must consider a new, or, at any rate, a newly recorded ailment,

THE THOMPSON YATES AND JOHNSTON LABORATORIES REPORT.

EDITED BY

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I.—HUMAN TRYPANOSOMIASIS ON THE CONGO.[1]

(Being the First Progress Report of the Expedition of the Liverpool School of Tropical Medicine to the Congo, 1903.)

By J. EVERETT DUTTON, M.B.Viet.,

Walter Myers Fellow, University of Liverpool,

J. L. TODD, B.A., M.D., C.M.McGill,

AND

CUTHBERT CHRISTY, M.B.Edin.

CONCLUSIONS.

The examination of trypanosomes seen in stained specimens of blood from cases of trypanosomiasis, from cases of sleeping sickness (typical or doubtful), in the specimens of cerebro-spinal fluid of the latter cases, and in the blood of experimental animals infected with either of three above-mentioned fluids, has led us to the following conclusions:—

(1) The trypanosomes seen in the blood of man, whether symptoms of sleeping sickness were present or not, have always been the same. The number of cases in which trypanosomes from the spinal fluid have been examined is at present too small to permit of a definite description of morphologic characteristics. We have seen forms in the cerebro-spinal fluid similar to those described by Bruce and Castellani, and also longer forms similar to those seen in the finger blood of the same cases.

(2) None of the human trypanosomes seen, whatever their source, have presented any morphologic appearance incompatible with *Trypanosoma gambiense.*

(3) The parasites seen in rats inoculated with the cerebro-spinal fluid of cases admitted to the hospital for sleeping sickness are the same as those seen in rats inoculated with the blood of cases of either sleeping sickness or simple trypanosomiasis.

(4) The organisms seen in the blood of rats inoculated with trypanosomes from any of the three indicated sources have up to the present shown no differences from those observed in animals infected with *Trypanosoma gambiense.*

We have observed the extraordinarily long forms with prolonged flagella, and the stumpy forms with short flagella described as occurring in animals inoculated with the Gambian parasite.

We have, therefore, no reason to suppose that the organisms seen by us in the Congo are other than *Trypanosoma gambiense.*

[1] This Paper was published in the *British Medical Journal*, January 23rd, 1904.

II.—HUMAN TRYPANOSOMIASIS AND ITS RELATION TO CONGO SLEEPING SICKNESS.[1]

(*The Second Progress Report.*)

By J. Everett Dutton, M.B.Vict.,
Walter Myers Fellow, University of Liverpool,
John L. Todd, B.A., M.D., C.M.McGill,
and
Cuthbert Christy, M.B.Edin.

For descriptive purposes the cases met with are divided into three main groups, although no sharp line of demarcation could be drawn between them: (*a*) Cases with no definite symptoms of illness; (*b*) cases with few symptoms of illness; (*c*) fatal cases showing well-marked symptoms—subdivided into (1) cases showing no sleep symptoms, and (2) cases showing sleeping symptoms. The deep sleep, continued sleep, or lethargy, has been, perhaps, made too much of in the descriptions of the disease, as in the Congo district it played almost a secondary part in the clinical symptoms of the illness.

Death does not seem to be produced by trypanosomes alone. Secondary bacterial infections seem to determine the fatal issue in many cases of Congo sleeping sickness. Out of 22 necropsies, 13 showed complications and obvious secondary infections. They were: purulent meningitis, 4; purulent pleurisy and pneumonia, 1; pneumonia and localised tubercle of lung, 1; localised gangrene of lung, 1; enlarged caseating and breaking down of glands in thorax and abdomen, 2; dysenteric ulceration of large bowel (perforation in one case), 2; universally adherent pericardium (recent), 1; infiltration of pus in femoral, inguinal and intestinal iliac glands (gonorrhœa), 1. In Uganda and the Congo purulent meningitis has been the most frequent complication. In all such cases an almost pure culture of diplococcus occuring in small chains was found.

III.—THE CONGO FLOOR MAGGOT.[2]

A Blood-Sucking Dipterous Larva Found in the Congo Free State.

By J. Everett Dutton, M.B.Vict.,
Walter Myers Fellow, University of Liverpool,
J. L. Todd, B.A., M.D., C.M.McGill,
and
Cuthbert Christy, M.B.Edin.

The first specimens of the maggots seen were met with at Nkanga, in the cataract region of the Congo. The maggots were mostly found by digging with the point of a knife in the dust-like cracks of the mud floor of the native huts. Where people slept on beds or platforms raised from the ground the maggots were not so numerous as under the sleeping mats laid upon the floor. Many of the maggots were turned up from a depth of three inches or more. As many as fifty were obtainable from beneath a floor mat at times. The specimens found varied in size from 2 to 15 mm. in length.

The fly was submitted to Mr. E. E. Austen, of the British Museum, who pronounced it to be the *Auchmeromyia luteola*, Fabr., belonging to the *Muscidæ* family. The fly itself is incapable of sucking blood.

Experiments are being conducted with the floor maggot with the special object of ascertaining whether it is in any way connected with the transmission of trypanosomata.

IV.—THE CEREBRO-SPINAL FLUID IN SLEEPING SICKNESS (TRYPANOSOMIASIS).[3]

104 Lumbar Punctures.

By Cuthbert Christy, M.B., C.M.Edin.

The total number of cases here recorded is too few to permit of any very definite statements, but I think it is sufficient to allow of the following provisional conclusions:—

(1) That in many cases the trypanosomes never find their way into the cerebro-spinal fluid, and in those cases in which they do they are more likely to be found towards the termination of the disease.

(2) That the commencement of the fever or other symptoms is in no way co-related to the entrance of the parasites to the cerebro-spinal fluid.

(3) That a large number of trypanosomes in the cerebro-spinal fluid is rare, but when it does occur there is usually an access of temperature.

(4) That the parasites may come and go in the cerebro-spinal fluid as in the blood.

(5) That enormous numbers may appear in the blood without appearing in the cerebro-spinal fluid, and, to some extent, *vice versa*.

(6) That when trypanosomes are present in the cerebro-spinal fluid its white cell elements are apt to be increased.

(7) That in cases where the parasites gain access to the cerebro-spinal fluid early in the disease, mania and other head symptoms are more likely to be prominent.

A description of the various developmental forms of trypanosomes to be found in sleeping sickness cases in the cerebro-spinal fluid; of the various cells of the fluid, in particular a peculiar large mulberry-shaped cell; of its chemistry; of certain large organisms with actively dancing particles, met with occasionally; of the occurrence of nematode larvæ and ova resembling those of *Ankylostoma duodenale* in connection with the fluid in many cases, and of other matters of interest, must be left for a future publication.

[1] This Paper was published in the *British Medical Journal* of August 20th, 1904, and a Summary was given in the Journal of Tropical Medicine, August 15th, 1904.

[2] Published in the *British Medical Journal*, September 17th, 1904, and summarised in the Journal of Tropical Medicine, August 15th, 1904.

[3] Published in the *British Medical Journal* of August 20th, 1904, and summarised in the Journal of Tropical Medicine, August 15th, 1904.

V.—A COMPARISON OF THE ANIMAL REACTIONS OF THE TRYPANOSOMES OF UGANDA AND CONGO FREE STATE SLEEPING SICKNESS WITH THOSE OF TRYPANOSOMA GAMBIENSE (DUTTON).[1]

A Preliminary Report.

By H. Wolferstan Thomas, M.D., C.M.McGill,
and
Stanley F. Linton, M.B., B.Sc.Viet.

The strains used for experiment were as follows: Three strains of *Trypanosoma gambiense* from the Gambia. Two strains from Uganda: (1) from the cerebro-spinal fluid of a case of sleeping-sickness; and (2) from the blood of a case of trypanosome fever.

The *Trypanosoma gambiense* strain was mostly derived from a boy, and rats, mice, guinea-pigs, rabbits, cats, dogs, monkeys and a goat, donkey, horse and chimpanzee were all successfully inoculated. The strain derived from cerebro-spinal fluid of Uganda cases of sleeping sickness was obtained in a rat which had been inoculated from a monkey infected from the cerebro-spinal fluid of a case of sleeping sickness.

The strain derived from cerebro-spinal fluid of sleeping sickness in the Congo Free State was also sent in a rat inoculated with a cerebro-spinal fluid from a case of sleeping sickness.

Conclusions.

(1) The trypanosomes found in (*a*) cerebro-spinal fluid of Uganda sleeping sickness cases, (*b*) cerebro-spinal fluid of Congo Free State sleeping sickness cases, (*c*) blood of Uganda trypanosome fever cases, and (*d*) blood of Congo Free State trypanosome fever cases, are all identical in animal reactions and morphology with *Trypanosoma gambiense*. The specific name *gambiense* (Dutton) must therefore for the future include the trypanosomes from the above-mentioned sources.

(2) There seems to be no acquired immunity against infection.

(3) There is no transmission of immunity to offspring.

(4) An animal which seems to have recovered may months later show parasites once more, apparently as the result of lowered vitality.

VI.—TWO CASES OF TRYPANOSOMIASIS IN EUROPEANS.

By J. Everett Dutton, M.B.Viet.,
John L. Todd, B.A., M.D., C.M.McGill,
and
Cuthbert Christy, M.B.Edin.

The cases seem well worthy of record, since they tend to indicate with what uniformity the accepted signs of the disease may be expected to occur in Europeans infected with *Trypanosoma gambiense*.

The history of Case 1 is compiled from notes and temperature charts taken by the patient's husband during her illness.

[1] Published in the *Lancet*, May 14th, 1904.

Case 1.—Mrs. G., age 35, a missionary. The patient's first stay in Congo was during the years 1895-99. During this period she had four small fevers, yielding to quinine—maximum temperature 103° F.—and a supposed attack of hæmoglobinuric fever. One year without fever was then spent in England, and in June, 1900, patient, weighing then 147 lbs., again went to the Congo. Soon after her return she had three attacks of fever—maximum temperature, 104° F.—which were successfully treated by quinine; and from November, 1900, to July, 1901, she was in good health.

During the first days of August, 1901, the patient took a long canoe journey from Bolobo to her station at Bongandanga on the Lopori, and was severely bitten by "river flies." At the end of August, six days after the completion of the canoe trip, a severe fever commenced and lasted, without interruption, for twenty-five days. The highest temperature was 104° F., but the fever was very persistent, and remained constant for two or three days at 103° F., then at 102° F., and so on. Quinine and phenacetin had no effect, and the temperature was relieved only temporarily, but unfailingly, by baths. For the next three months, weekly fever. First day, temperature about normal; second day, slight fever; third day, marked temperature; fourth day, "always just one degree higher than third day"—highest temperature recorded, 104·6° F.—fifth and sixth days, temperature much lower; seventh day, "about normal." From January to April, 1902, the temperature ranged between 99° and 100° F., and was never normal.

In January, and again in February, her eyes, particularly the left, were "inflamed," and five days were spent with bandaged eyes in a darkened room. At the end of February, and during March, while on her way from her station to the sea-coast, four more attacks of fever occurred—temperature rising to 102°-103° F. During the voyage to England, where she arrived at the end of April, 1902, the patient's temperature gradually fell to normal. She remained in Europe until August, 1903, and then again returned to Africa. While at home she, on two occasions, suffered from fever, rising to 103° F.; quinine efficacious. During June, 1902, and again in January, 1903, her eyes were once more affected, and oculists were consulted. At various periods during her stay in Europe "red patches" as large as a "half-crown piece," lasting for three or four days, appeared on her legs; they were tender, and the surrounding skin seemed hard. At one time patient's joints seemed stiff, at another she suffered from an "inflamed throat." Three months were spent in Switzerland, the patient gained rapidly in health, and on leaving for Congo, August, 1903, seemed well, and weighed 145 lbs. Her medical history from her last arrival at the Congo to April, 1904, when we first saw her, is as follows:—

"*October* 10th, 1903. Fever on the river steamer; lasted for two days; maximum, 102° F.

"*November* 9th. Still on steamer; temperature suddenly rose to 105° F., reduced by bath; throat bad next day, relieved by gargling; discharge of matter for two days. On Tuesday, November 10th, Wednesday, and Thursday, slight fever. Friday, 13th, 5 a.m.,

105° F., bath; 10 a.m., 105° F., bath; 1 p.m., 105° F., bath; 3 30 p.m., 107° F., bath; 8 p.m., 105° F., bath; the temperature fell to about 101° F. after each bath; patient delirious.

"*November* 14th. Patient too weak to walk, was carried from the steamer; highest temperature, 102° F. At 2·30 on the morning of the 15th the temperature rose to 105° F., a bath was given, and temperature brought down. On the 16th the temperature was 100° F., and on the 18th normal. There was no more fever until March, 1904."

For two or three weeks she was apparently quite well. About Christmas, 1903, severe headaches commenced; about the middle of January these began to be accompanied by vomiting. At first the vomiting and headache appeared at irregular intervals, later as follows: "First day, comparatively well; second day, malaise with slight headache; third day, bad headache, vomiting two to six times (on one occasion eight times). There was no tenderness or pain, save headache, and no nausea or loathing of food. On the bad days an attempt at any exertion, even to read a letter, was certain to precipitate an attack of vomiting. About February 14th there was vomiting, once or twice, on alternate days. Took liquor arsenicalis, two to six drops three times a day."

March 10th. Stopped arsenic; left her station for a change.

March 16th. Headache and vomiting.

March 17th. Severe vomiting, bile-stained vomitus.

March 18-20th. Well.

March 22nd. Vomiting and headache, next day emesis more severe; vomitus bile-stained.

March 24th. Fairly well.

March 25th. Severe headache, vomiting, fever (maximum 104·4° F.). The fever gradually lessened during the two following days, and from March 29th to April 12th patient was "quite well."

Quinine was given during this fever, but was, probably, never retained, since the ingestion of anything, liquid or solid, provoked emesis.

Physical Examination, April 15, 1904. — General condition: Well-made woman; height, 5 feet 6 inches; weight, 126 lbs,; rather anæmic appearance; complains only of shortness of breath and of becoming easily fatigued.

Skin: No erythemata; no distinct œdemas, although the skin of legs has a distinctly doughy feel; on scratching skin capillaries contract.

Lymphatic glands: Slightly enlarged, palpable in axillæ and neck.

Circulatory system: Slight venous pulsation in neck; slight epigastric pulsation.

Heart: Apex beat normal in position; cardiac dulness normal; no thrill over heart or in neck; sounds, a slight blowing systolic murmur limited to apex area, the aortic and pulmonary second sounds are rather loud; no venous hum in neck.

Pulse: Frequent (96), tension medium, regular in time and force, artery normal.

Respiratory system: Nothing abnormal subjectively or objectively.

Digestive system: Appetite good; bowels fairly regular, occasional slight constipation; tongue clean.

Liver: Dulness normal, no tenderness on pressure.

Spleen: Not enlarged nor tender.

Nervous system: No headache or pain; sensation to pain acute: sensation to touch, heat, cold, and distance between pin-points perfect; there were distinct localised hyperæsthetic areas on different parts of the body, under right nipple, at apex of heart and on shins, slightest pressure causes acute pain. Superficial reflexes normal; knee-jerks just obtainable. Mental condition normal.

Eyes: Pupils react to accommodation and light; both discs definitely congested (left more than right).

Throat: Tonsils not enlarged, no redness.

Generative System: Menstruation regular, flow normal in amount, generally slight temperature on first day.

Urine: April 29th. Twenty-four hours specimen (preserved with thymo), volume 1,100 ccm.; acid, colour normal; cloudy precipitate, Sp. gr. 1020 (82° F.); no albumen or sugar; urea, 1·85 grammes to 100 ccm. urine.

April 30th. Twenty-four hours specimen, volume 1,740 ccm.; colour, normal; acid, no albumen of blood; urea, 1·55 grammes to 100 ccm. urine.

Faces: Careful examination showed no signs of intestinal parasites.

Liquor arsenicalis, five drops three times a day, was prescribed,and the patient was directed to increase the dose by one drop every third day. This treatment was followed until June 3rd (twenty drops t.i.d.), when symptoms of saturation was evident, and this drug was discontinued for a time and iron and arsenic pills were substituted.

During 1895-96-97, quinine, grains v., was taken daily as a prophylactic against malaria. Its use was discontinued as it was thought to be the cause of "neuralgia." From January, 1903, to the present about three grains have been daily taken.

April 21st. Slight epitaxis; bleeding at the nose had occurred on three previous occasions, once in Switzerland, twice in Africa, always slight.

May 22nd. For past three days has had swollen wrists, first one, then the other; to-day one side of face is swollen, no redness or tenderness, or evidence of insect-bite; these swellings are fugitive, and last only for a day.

June 2nd. For last few days patient has complained of lack of appetite and loss of energy; the swellings on face and hands persist; a papular eruption has appeared on the chest.

The accompanying chart shows the type of temperature and the result of the examinations for parasites during the first three weeks of our observations. On April 15th the parasites disappeared from the peripheral blood, and the temperature fell to normal. In spite of daily examinations of cover-slips and periodic centrifugalisation of blood, trypanosomes have not again been seen. The temperature (with one slight exception) has, during this period, always been normal.

Until signs of arsenical saturation commenced to show themselves the patient felt "much better;" she felt stronger and was less easily fatigued. There has been a slight increase in body weight, and in the value of erythrocyte and hæmoglobin estimations.

May 12th.	May 27th.
Hæmoglobin, 68 per cent. ...	74 per cent.
Red cells, 4,510,000	4,450,000.
White cells, 4,650	4,000.

We have never seen malarial parasites in this case.

It was through the kindness of Mr. M., a missionary stationed at Leopoldville, and the husband of the Case "Mrs. M.," described by Broden and Manson, that this case was brought to our notice. He felt convinced that he had, in October, 1903, seen an erythema on Mrs. G.'s forehead in every way similar to those which he had previously seen in each of the cases from the Congo described by Manson.

We have been unfortunate in never seeing this case when erythemata were present.

(*To be continued.*)

THE HABITS OF MOSQUITOES.

(Extracts from "An Account of the Drainage and other Works Carried out with this Object during 1902 and 1903 at St. Lucia, West Indies.")

By Major W. M. Hodder.
Royal Engineers.

Major Gorgas, Medical Corps, U.S. Army, on the Stamping Out of Yellow Fever in Havana.

(*Continued from page* 77.)

Those who wish to make themselves fully acquainted with mosquitoes and their habits must consult technical books; but for the purposes of these notes I give my personal observations on the ways and manners of these insects, looking on them as vermin, so to speak—pestiferous creatures to be destroyed and hunted by every possible means which can be devised.

The first thing a hunter must do when in pursuit of game is to acquaint himself with its habits, and the successful hunter or sportsman will generally turn out to be an individual who has proceeded on these lines.

It is a matter of common knowledge that mosquitoes are found mostly in swamps, or places where water remains in pools for a considerable period; but the swamps, as already pointed out, need not be large morasses or bogs; tiny holes in the bush or grass, or even in rocks, are quite sufficient to give them the necessary amount of water in which to lay their eggs and so preserve the continuity of their kind.

They bear a great resemblance to the numerous midges and water gnats that live near rivers, lakes and ponds in temperate climates; and in all probability their common ancestors lived in marshes. A special study of these insects is being carried out by entomologists; when their work has been more advanced we shall be able to form a better opinion on all these points. But to the ordinary observer the distinction between the *Culex* and the *Anopheles* is very marked.

It should be noted that all mosquitos are classed as *Culicidæ*, but the common division of *Culex* and *Anopheles* appears sufficient for our purpose.

The former are more or less domesticated, and are found in houses and towns as well as in swamps. They breed in gutters, water-tanks, and filthy pools in back yards with equal facility. Their larvæ can be found in the gutters of high buildings or on the ground level.

So far as my observation goes, such is not the case with the *Anopheles;* they do not deposit their eggs anywhere except close to the ground level; I have examined hundreds of tanks four or five feet above the ground, but in not one single instance have the larvæ been found therein, although the tanks were actually standing on ground where these mosquitoes lived.

But although I can see no proof of their breeding in the artificial receptacles provided by man for water supply, there can be no doubt that they come into houses and stay there for a considerable time, their probable object being to obtain blood from the inhabitants; at any rate, that most certainly is what they proceed to do immediately on arrival.

The actual insects are different in appearance, but can be most easily distinguished when at rest.

The *Culex* perches like an ordinary fly; the *Anopheles*, on the contrary, places his body at right angles to the surface on which he settles.

The larvæ are very different and can be at once distinguished in water. The *Culex* larvæ hang from the surface of the water at an angle, whilst those of the *Anopheles* float flat on the top, the difference being due to the arrangement of their breathing apparatus; one has to look closely to distinguish *Anopheles* larvæ from small chips of dry grass, hay seed, &c.

The *Anopheles* larvæ are shorter than the *Culex*. The latter wriggle rapidly downward when disturbed, whilst the former sinks at an angle with very much less motion.

There is another difference between these two kinds of mosquitoes, viz., the *Anopheles* will as a rule only bite by night, and during the day they lie up; the *Culex*, on the contrary, bite whenever they can get a chance.

Often have I heard Europeans sneer at the coloured people for shutting up their houses as tight as possible by night with the object of keeping fever out. Scientific research has now proved that the natives were correct; if a house has doors and shutters closed the *Anopheles* cannot get in; it has the same effect, though not so perfect, as a house in which all the openings are closed with wire gauze.

After the yellow fever had disappeared our operations were mainly directed to the destruction of the *Anopheles*, and had no yellow fever taken place it is doubtful if the *Culex* would have received so much attention. As stated later, in the area surrounding the barracks both were destroyed indiscriminately as far as possible; but where yellow fever is not likely to prevail, it would be preferable to carry out operations against the *Anopheles* alone in the first instance; though very annoying, the *Culex* cannot, so far as is known, be of much evil consequence.

For many years it has been recognised that those who lived near swamps were especially subject to malarial fevers; and for this reason, although the actual cause was not known, barracks and other houses were constructed as far as possible on hilltops and hillsides, which would naturally be the dryest spots and the furthest removed from the "malarious" ground.

Frequently, however, fevers spread up to high points, and this was specially noticeable at distinct breaks in the weather, *i.e.*, at the end and the beginning of the rains.

Old West Indians say that in a very wet season there is no fever, and the converse; I shall endeavour to point out the reason for this.

In the very dry weather all pools, streams and water-courses dry up; the hills afford no places where the mosquitoes can breed, and they consequently perish (officers of the Royal Army Medical Corps have bred mosquitoes here, which have lived thirty days; perhaps they would have lived longer if free). The only habitations left for the insects are the low-lying swamps; even here they must become more or less congested as the margins are reduced by the drought.

When the rains come all is changed; the small streams are filled, swamps appear on what was in the dry season apparently firm ground, vegetation chokes up the water-courses, and the insects get a chance to spread out from their close quarters. In a country with a contour like St. Lucia, if the rain is practically continuous the insects find great difficulty in breeding on their way up the streams, because the eggs and larvæ are washed clean away even if deposited or hatched out. But when the rains are intermittent the streams and water-courses form a regular chain of pools from the low to the high ground; in these pools the mosquitoes deposit their eggs and the larvæ are rapidly hatched out, soon to become perfect insects. Thus the streams in this state form stepping stones, as it were, from the large low-lying swamps to those on higher ground; and when once the mosquitoes get a footing on the hillsides or tops, they have no difficulty in breeding (if pools or undrained swamps exist) all through the wet season, until the dry weather again establishes a block, when they again die off.

In St. Lucia building ground is very scarce on account of the steepness of the hillsides; consequently the houses of the poorer classes are frequently built close by the streams in the ravines, which are very congested in places and surrounded with trees and bush.

Most of the natives are probably infected, and the mosquitoes *en passant* bear the infection along. The idea that natives do not get fever is common, but a glance at the hospital returns will show the contrary. They are also bitten to a considerable extent by mosquitoes; but the bites do not show up or irritate as much as in the case of Europeans.

A very tiny pool is sufficient for the larva to become the perfect insect. On one occasion the writer found *Culex* larvæ, on the point of their final conversion, in a saucer-shaped depression not six inches across and containing water not more than half an inch deep, which had been formed in some way or other in the top of a large boulder. The hole could only be filled by falling rain, but had been sufficient to keep up a continuous succession of mosquitoes in a house, a few yards off, where everything else was mosquito-proof. When we broke up the boulder the supply of mosquitoes ceased.

There may be another reason why mosquitoes come up to high lands in preference to keeping to their haunts in the extensive low-lying swamps and marshes. They breed with extraordinary frequency, and must therefore multiply at certain seasons to enormous numbers. As with other creatures, only a certain number are capable of remaining in any given area; when this number is exceeded it becomes necessary for the surplus to migrate, and in so doing to invade portions of the country that otherwise they might not visit; after having done this for years, it may become a habit, it may even be an advantage in the struggle for existence, to move about in this manner, although we may not be able to see in what this advantage consists. Thus mosquitoes, like salmon and trout, may possibly run up valleys and streams with regularity at certain seasons.

It has been noticed several times that when barracks have been occupied immediately after construction the troops have at once contracted malarial fevers; the old explanation was that malaria resulted from the disturbance of the soil, and of course there are still people who believe in the "digging theory."

We had great opportunities of observing the effects of digging on a fairly large scale at the Morne during 1902 and part of 1903, when a scheme for the renewal of the whole foul drainage was carried out at a cost of £3,000.

There were no cases of fever amongst the few Europeans who were left on the Morne (the bulk of the white troops were moved to Vigie). Trenches 3 to 8 feet deep were dug not very far from inhabited quarters with no bad results.

But we observed that, even when such trenches were dry, there was a notable increase in the mosquitoes in the neighbouring buildings, although we drained the trenches (an easy matter as a rule on a hillside) and no water lay in them.

This leads me to suppose that mosquitoes are attracted by the smell of freshly excavated earth.

The soil and subsoil consisted in nearly every case of heavy volcanic clays, giving off a heavy smell by no means agreeable, from which, however, the workmen did not appear to suffer in the least.

If, then, a large barracks or fortification is constructed, and no precautions taken as to drainage or oiling standing water, what more likely than that the mosquitoes are attracted, as happened many times during our resewering operations? And having once come on to the site, if they are able to breed and feed on infected workmen, what more likely than that newly arrived troops should develop malarial fevers? This was actually the case when the artillery and infantry moved in December, 1901, to the scarcely completed barrack blocks at Vigie, when the surroundings gave facilities for mosquitoes to breed to almost any extent

Notes and News.

THE Royal Waterloo Hospital was, on February 28th, honoured by a visit from H.R.H. the Duchess of Albany.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Indian Medical Gazette," January, 1905.

1. Mosquitoes and Malaria in Ferozepore District, 1903. By J. R. Adie, M.B., Major, I.M.S.

2. A Case of Snake-bite (Cobra?). Recovery. By B. B. Ghosal.

3. Measles in India.

4. Myxœdema in India. Letters. By H. A. Smith, Major, I.M.S., and C. H. S. Hope, M.D.

5. Oil of Eucalyptus in Cholera. Letter by H. C. Banerji.

(1) Major Adie reports the following species of *Anophelina* having been found in the Ferozepore district of the Punjab.

(i.) Nyssorhynchus fuliginosus (Giles). Very common; including a "most quaint" winter variety.

(ii.) Myzomyia culicifaces (Giles). Very common.

(iii.) Nyssorhynchus Stephensi (Liston). Very common.

(iv.) Myzomyia Rossi (Giles). Very common.

(v.) Cellia pulcherrima. Very common.

(vi.) Myzomyia Turkhudi (Liston). Three specimens only.

(vii.) Myzorhynchus sinensis (Wied.). Three specimens only.

(viii.) Nyssorhynchus Jamesi (Theobald). Very scarce, three specimens.

(ix.) Nyssorhynchus maculipalpis. One specimen.

(x.) Myzorhynchus barbirostris (Wulp). Larva only found.

(2) Binode Bihan Ghosal, assistant surgeon, Jangipur, reports a recovery from snake-bite by antivenene. The patient, a woman, was bitten on the toe by a cobra (?) about 10 p.m. Ligatures within ten minutes were applied, one above the ankle, another below and a third above the knee. The "fowl" treatment was applied by the patient's friends at 2 a.m., or four hours after the bite, and kept up for five hours. At 7 a.m. Mr. Ghosal, on seeing the patient, first injected 10 mins. liq. strychnin into the arm, and subsequently 10 cc. Calmette's antivenene into the buttock, followed by a second dose of 10 cc. about half an hour after the first injection. The woman, although apparently in the last extremity, made a speedy recovery.

(3) Measles in the United Provinces (North-West Provinces and Oudh) caused in 1903 no less than 98,112 deaths. These figures show that not only is measles a common ailment in India, but that the mortality from the disease is serious.

(4) Myxœdema would appear to be not an unknown disease amongst the natives of India. Major H. A. Smith reports one case (woman) which occurred in the Dufferin Hospital at Rae Bareli in 1903. Dr. Hope, writing from Pubna, Bengal, mentions four cases, two of the patients being Mahomedans (men), and two Hindus (men). Thyroid gland seems to have been serviceable in promoting cure.

(5) H. C. Banerji, writing from Chunchal, states that he treated cases of cholera in an outbreak of the disease which occurred in May, 1904, as follows: The treatment adopted in all the cases was the administration of oil of eucalyptus with mucilage and syrup; the oil was given in 5-minim doses to the adult. It did not produce any nausea, and the taste, sweetened with syrup of lemon, was not unpalatable. In three cases the sulphate of strychnine was hypodermically injected, and of these two were fatal. The percentage of recovery was 63. The treatment deserves a fair trial, the oil acting both as an antiseptic and stimulant.

MALARIA IN INDIA, 1904. By. Dr. G. Polverini, of Florence.

Polverini states that his object is to compile briefly the results of the latest studies on malaria as carried out in India, more especially by the members of the Commission specially sent there by the Royal Society of London, with the addition of a few considerations resulting from his own personal experience acquired by long residence in India.

He first contrasts the reasons for the occurrence of malaria in the Roman Campagna during the months of July, August and September only, against those which pertain to the various provinces of the great Indian peninsula, the latter being divided into three main groups, according to the severity of their malarial endemicity: (1) Places where malaria is intense, *e.g.*, the Decars in Bengal, certain villages near Jeypore, and to the south of Madras; (2) places where malaria has a medium intensity; and (3) places where the cases are few in number and these not severe, *e.g.*, Calcutta, Madras, and to a certain extent, also, Bombay. In the north of India, owing to the marked difference of temperature at the various seasons, the greater number of cases correspond approximately with the same period as in Italy, whilst in the more central and southern regions malarial cases occur all the year round, but during the dry seasons the regions nearest to collections of stagnant water are those most severely attacked, whilst during the rains—when numerous pools of stagnant water can be formed everywhere—malaria becomes more generally distributed, owing to the greater facilities for breeding places for Anopheles. Other places are only malarious during certain months, and these precisely at the period when numbers of coolies immigrate for agricultural labours; as these coolies possibly come from less malarious districts, they supply the non-immune element in a district where malaria-bearing Anopheles are probably present.

He does not recommend the use of local hospital statistics for ascertaining the malarial endemicity, nor is the spleen test *per se* of much value, but he admits that the endemic index of a district, as indicated by the percentage of infected children, is the most reliable one as to the malarial intensity of a place. The search for and determination of the species of malarial Anopheles which infest a given place is also a fairly safe method for judging its healthiness, but in practice this is too lengthy a one for accurate measurement.

Polverini states that, as far as he knows, the unpigmented forms of parasite have not yet been described as occurring in India; furthermore, that many of the cases which are diagnosed as malarial are not really so, for owing to the spectre of malaria being everywhere present, the physician is sometimes apt to classify as malarial those cases of fever of which the cause is not clear, and the too liberal prescription of quinine (though not as regards doses) only serves to modify the course of the febrile process without arresting it.

As regards *malarial hæmoglobinuria*, the author is of opinion that as yet it cannot be absolutely denied that it is caused by a special form of malarial parasite, as there is now a tendency to admit that there are varieties of the æstivo-autumnal parasites which, whilst almost indistinguishable morphologically, must nevertheless be differentiated by the clinical aspect of the fevers of which they are the cause. If the possibility of this variety of parasite is not admitted, it is difficult to explain the recent abundance of cases of hæmoglobinuric fever in India, when all the other conditions still exist unchanged for so long a time; only by admitting the possibility of this special variety of parasite—which is in some way specific for hæmoglobinuria—having been introduced recently by individuals coming from other regions can a plausible reason be given for this very strange fact. He, however, admits that the individual must have previously suffered from malaria, and also that the blood may somehow become so altered that, under certain special conditions, the specifically altered red blood cells may be dissolved, but only when a fresh factor is added, such as quinine, or a new invasion of malarial parasites, or some other as yet undetermined factor.

With regard to *kala azar*, whilst most of the cases have suffered at some time or other from malaria, many observers state that kala-azar itself cannot be considered as of malarial origin, as it fails to show the pathognomonic signs of malaria—periodicity of the attacks, parasites in the blood, and amenability to quinine. The presence of Leishman-Donovan bodies in this disease is admitted, but the reader is left to decide definitely for himself whether they are trypanosomes, or belong to the genus *Piroplasma*, or are a new species of parasite.

Lastly, he names some of the malarial Anopheles, and divides the Indian species into four main groups, represented respectively by *A. jeyporensis*, *A. barbirostris*, *A. fuliginosus*, and *A. Rossii*. Dr. Polverini concludes by saying that, whilst some species of Anopheles are highly malarial, rendering the districts where they are found most dangerous for human beings, other species (whilst they could be infected experimentally, so as to show zygote formation) were not naturally transmitters of human malaria, and therefore the districts where they were plentiful could be inhabited with impunity.

J. E. N.

"Revista de Medicina Tropical" (Havana), December, 1904.

Bilharziasis at Puerto Rico.

References to a Study of *Bilharzia hæmatobium* and Bilharziasis at Puerto Rico. By J. Gonzallez Martinez.

Martinez claims to be the first to discover the existence of bilharziasis in Puerto Rico. Out of 1,321 persons examined at random, 59 cases were found to be infected with bilharzia, or 4·46 per cent. The intestinal form only was present, and up to date no single case of the genito-urinary form had been diagnosed. The presence of the ova was generally accompanied by symptoms of pseudo-dysentery, but the ova were also detected in persons who appeared to be in excellent health. Even in patients markedly anæmic from ankylostomiasis their presence in no way interfered with the cure of the anæmia following on the expulsion of the ankylostomes by thymol.

He rejects the theory of Loos as regards the infection of bilharzia through the skin, and believes that all his cases were infected through the stomach.

Furthermore, with regard to the statement that female bilharzia were never found in the splenic vein, he states that in one autopsy which he performed he found both males and females in the splenic vein, specimens of which were forwarded to Dr. Stiles for examination.

J. E. N.

Plague.

PREVALENCE OF THE DISEASE.

India.—During the weeks ending February 4th and 11th the deaths from plague numbered 36,117 and 33,660. In the United Provinces the numbers were highest, standing at 15,367 and 14,438 respectively.

South Africa—During the weeks ending February 4th, 11th, and 18th no cases of plague in South Africa. Plague hospitals empty on February 18th. No rats or mice in any part of South Africa found infected.

Mauritius.—During the weeks ending February 23rd and March 2nd and 9th the fresh cases numbered 1, 2, and 3; deaths, 1, 2, and 1.

Hong Kong.—During the weeks ending February 25th and March 4th, fresh cases 2 and 2; deaths 2 and 2 respectively.

Singapore.—Between January 5th and 11th 3 cases of plague reported.

Aden.—During the week ending January 28th, fresh cases 152; deaths 127.

Egypt: Suez.—During the week ending February 11th, fresh cases 2.

Brazil.—Between December 26th and January 22nd there occurred at Rio, fresh cases 72; deaths 36.

Argentine.—The local Press announce 2 cases of fatal plague on January 31st.

Chili.—A telegram dated Santiago, February 27th, states that plague exists at Pisagua.

Notices to Correspondents.

1.—Manuscripts sent in cannot be returned.

2.—As our contributors are for the most part resident abroad, proofs will not be submitted to those dwelling outside the United Kingdom, unless specially desired and arranged for.

3.—To ensure accuracy in printing it is specially requested that all communications should be written clearly.

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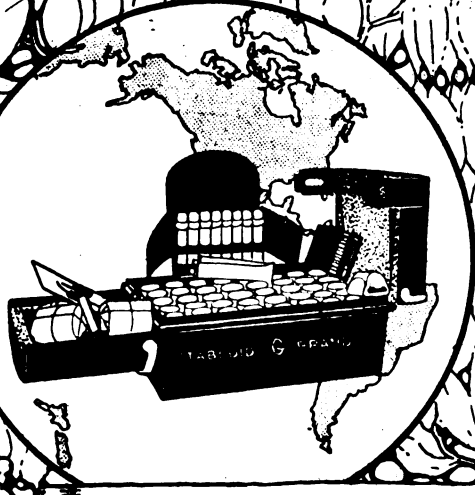
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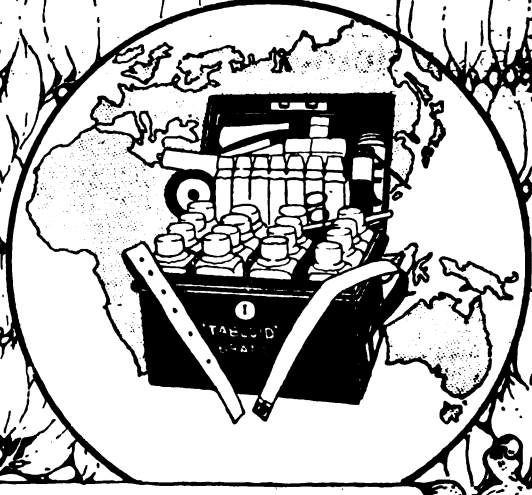
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[For London School of Tropical Medicine, see page vii.]

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The Journal of Tropical Medicine.

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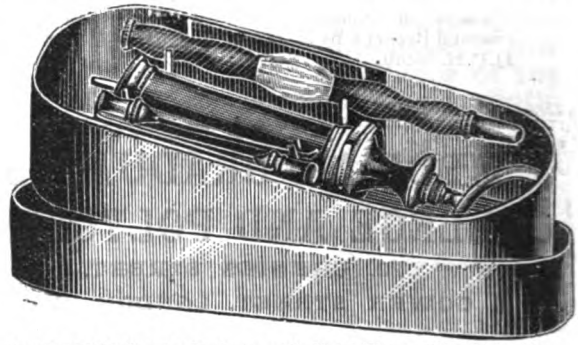
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Original Communications.

ELEPHANTIASIS OF THE SCALP.

By G. Allardice Macdonald, M.B., C.M.Edin.

Medical Officer to H.H. The Sultan of Zanzibar and Zanzibar Government.

[See Plate.]

The extreme rarity of this condition is my plea for publishing this case. Elephantiasis of the lower extremities, scrotum, arms, vulva, and mammæ is in all tropical countries very frequently met with, and has been described times without number, but I am not aware of a case affecting the scalp having previously been recorded. The patient, a Swahili, was born and lives in Zanzibar. He is twenty years of age, and first came under my notice in November, 1903. The photographs shown were taken in December, 1904.

The following notes taken in 1903 and 1904 give an accurate account of the case.

When quite a boy the patient noticed a small lump over the occiput. This has increased each year until it has reached the dimensions illustrated by the photographs, and at first sight might easily be mistaken for some extraordinary style of hairdressing. He has from the first onset of the disease suffered, at varying intervals of from one to three months, from febrile attacks, during which the swelling has increased in size and become acutely painful. These attacks are characterised by severe rigor, fever, loss of appetite, and headache, which extend over several days. All the affected parts become much swollen, hot, and intensely painful. These symptoms gradually subside, but the swelling not entirely, and there is after each remission a greater degree of thickening and hypertrophy left.

The appearance of the scalp tumour is typical. The skin is rough, thrown into deep irregular folds and very coarse. The hair is very scanty, and what is left of it also coarse. The skin cannot be caught up between the fingers. The affected tissue cannot be moved over the deeper structures, it is hard, dense, and does not pit on pressure. The thickest part of the mass measures about 2½ inches.

Externally the patient shows no signs of filarial swelling in other parts of his body, such as the legs, arms, or scrotum, but on examination of the glands there is further evidence. The occipital and submaxillary glands are much enlarged, as well as those in both posterior triangles of the neck and both axillæ (especially so on the left side). The glands in the groins are not affected to so marked an extent, but around the saphenous openings (and more so on the left side) they are greatly increased in size. Distinct thickenings and cord-like swellings are felt along the lines of lymphatics on the inner sides of the thighs, and extending down almost to the knees. The popliteal spaces are unaffected. During his febrile attacks the patient states that he has always swelling and pain in one or other of these affected regions.

I am indebted to Dr. A. H. Spurrier for a very careful examination of the blood, in which he demonstrated filariæ in great numbers.

CASE OF RELAPSING FEVER, WITH REMARKS ON ITS OCCURRENCE IN THE TROPICS AND ITS RELATION TO "TICK FEVER."

By F. Creighton Wellman, M.D.

Angola, West Africa.

Eighteen months ago, when I drew up a report on the diseases common in the district,[1] I had not seen relapsing fever here. Since that time, however, I have seen and had opportunity of studying a perfectly typical case which I now bring before the readers of the Journal, it being the first case which, to my knowledge, has been described from this region. The publication of the case has been delayed several months owing to the writer's absence from the district.

Case Record.

No., M. 132; *name*, Gandu; *race*, Bantu (Bihé tribe); *age*, 32; *sex*, male; *date of admission*, March 3rd, 1904.

History.—Patient stated that he had been taken ill with fever the day before admission. He had had no rigor nor vomiting. There were pains in back and limbs. He thought his disease was malarial fever. He had experienced no recent previous illness.

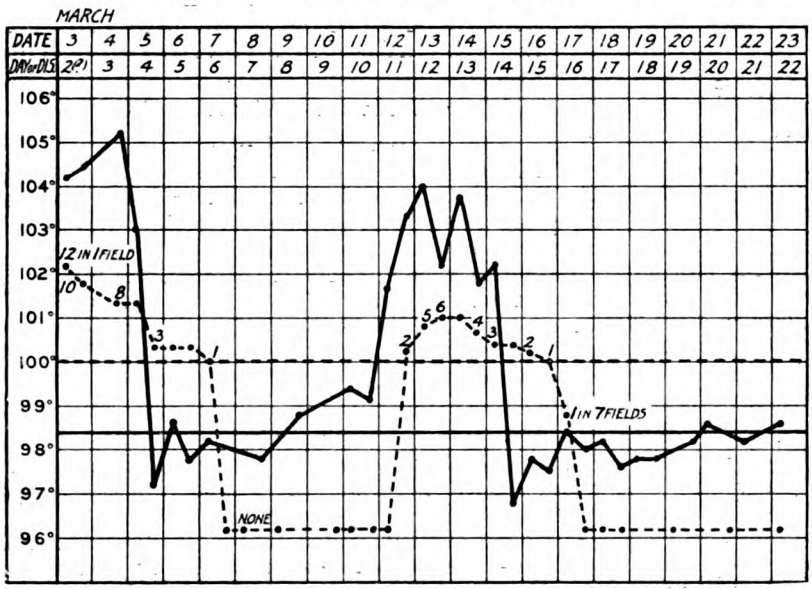
Condition at Time of Admission.—Patient is a large man, fairly well nourished. Says he is thinner now than when taken ill. Temperature, 104·4° F.; pulse, 92; respiration, 29. Pupils normal. Spleen slightly enlarged. *Spirillum Obermeieri* very plentiful in blood, averaging about a dozen to each field ($\frac{1}{12}$ imm. lens, oc. II.). The patient looks very comfortable and I should not have suspected so high a temperature.

Course of the Disease.—The temperature remained fairly stationary for two days after admission and the parasites were found in the blood during this time.[2] On the third evening the temperature was found to have fallen to subnormal, although the parasites still persisted (but in fewer numbers) in the blood until the fifth evening, after which they could not be demonstrated, although several large films were searched. The blood remained clear of parasites for about a week, during which time the patient felt well and wanted to leave the hospital. On being advised to stay he worked March 8th and 9th in making bricks. There was no pyrexia during this time, although the temperature rose to normal and slightly above. On March 11th he had a slight rise of temperature, with some malaise and pains in the back; and the following day his temperature went steadily higher and he took to bed. There was no vomiting or purging. His blood remained free of parasites till the evening of March 12th. On March 13th there were many spirilla, although fewer than in the previous attack. They grew gradually less and finally disappeared from the blood on the evening of March 17th. The temperature (as in the first attack) fell a couple of days before the disappearance of the parasites and remained subnormal a few days after the crisis.

[1] Published in Journal of Tropical Medicine, February 15th, 1904.

[2] I was called away the morning after the patient was admitted and did not get the temperature or examine the blood on that occasion, but with this exception the case was closely watched.

COMBINED BLOOD AND TEMPERATURE CHART OF CASE M. 132.



DESCRIPTION OF CHART.—The temperature is represented in the usual manner by an unbroken line. The dotted line represents the comparative abundance of the parasites in the blood during different stages of the attacks, taking the line marked 100 as representing the average of one parasite in each field. Thus 101° would mean six parasites in each field, 102° eleven parasites, &c. I have not tried to compute the number of parasites in a given volume of blood, as my object was rather a study of the relation between the temperature and the presence of parasites in the blood throughout the attacks.

It will be seen by glancing at the accompanying chart that the second attack was slighter than the first, both in the matter of temperature and of the number of parasites in the blood. The patient was persuaded to remain another week in the hospital after recovery from the second attack. He continued well and worked during the whole period at fairly heavy manual labour. He insisted on leaving the hospital on March 23rd, and I have not seen him since.

The Parasite.—The parasite of relapsing fever measures about 30 μ × 0·1 μ and is sharp at the ends. It was very abundant in this case (*vide* chart) during the exacerbations of fever. The spirillum, or more properly spirochæte, of Obermeier is placed by many observers among the Protozoa.

In view of the theories of Schaudinn,[1] the possibility of the spirochætæ found in relapsing fever representing some stage in the development of a flagellate occurs to one. The relation of the hæmamœba of a certain owl (*Athenè noctur*) to a spirochæte, as described by the author just mentioned, is very suggestive in this connection. In the blood one occasionally sees the spirilla lying together in such a fashion as to suggest the multiplication by longitudinal fission, which is characteristic of other spirochætæ and of trypanosomata. Tubes of hæmaglobin agar, inoculated with blood from the patient and incubated at 37° C. showed nothing of such multiplication, and the cultures died out in about ten days. I did not try inoculation experiments with the patient's blood.

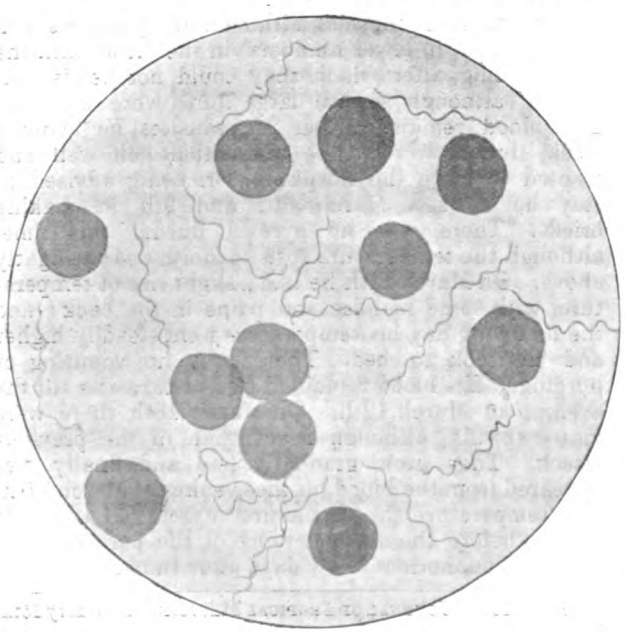


FIG. 1.—*Spirillum Obermeieri* in blood. Stain, carbol-fuchsin. This field represents the infection at its height.

THE OCCURRENCE OF RELAPSING FEVER IN THE TROPICS.

Relapsing fever is not described in the various books on tropical medicine (Davidson, Manson, Scheube, Brault, Fisch, &c.) which I have in my library, but an examination of current medical literature reveals its existence in South China, Sumatra, India, and other parts of the Far East, and in several quarters of Africa. It is quite probable that it has been overlooked in other places, or mistaken for other conditions. For instance, the following description by Dr. A. R. Cook[2] of what he believed to be free microgametes of the *Hæmamœba præcox* in the blood of an African native is almost certainly that of a case of spirillum fever. Dr. Cook writes:—

"The statement in the ninth edition (1900) of Green's 'Pathology,' that 'flagellated organisms are never found until the blood has been withdrawn for about a quarter of an hour' is quite incorrect. The very first case in which I saw it . . . that of an anæmic and emaciated child, *on making a fresh specimen and examining at once, the whole field seemed to be full of a mass of waving and lashing flagella coming*

[1] JOURNAL TROPICAL MEDICINE, June 1st, 1904, *et seq.*
[2] *Idem*, February 15th, 1902, p. 53.

from nearly every corpuscle. It reminded me of the rippling effect produced by the wind passing over a cornfield![1] The child was desperately ill and died the same night. Careful examination in similar cases has failed to detect any 'crescent' bodies which could have been transformed into the flagellated bodies. On the other hand, the flagella generally seem to spring . . . from unaltered red blood corpuscles."

The above forms a capital description of *Spirillum Obermeieri* in the blood, and there is little doubt but that this was what Dr. Cook saw. His drawings, too, are very suggestive of the parasite just named. Others may have made a similar mistake and, as the parasite is sometimes very scarce in the blood, it may have been overlooked in many cases. Of course, the disease is easily recognised when it assumes the form of an epidemic.

Although relapsing fever also occurs in temperate climates, yet it would seem, in the light of what has been said, to have as good a claim to be ranked as a tropical disease as has malaria, leprosy, plague and other affections, which are only partially dependent on climatic conditions for their survival. The disease under consideration is now generally thought to be carried by vermin. The bed-bug (*Acanthia lectularia*), and more recently the "Ocihopio" tick (genus *Ornithodorus*), of which there appear to be at least two species in Africa,[2] have been suggested as possible hosts. The careless personal habits of savage and semi-civilised peoples greatly facilitate the spread of a disease so transmitted, and its presence in most tropical countries should not therefore be a matter for surprise.

Are "Tick Fever" and Relapsing Fever the same Disease?

Since the publication by Marchaux and Salimbeni of their work on the spirillar disease of fowls, there has been, as I have said, a disposition on the part of some to hypothecate a tick as the carrier of the human spirillum also. Drs. Ross and Milne, of Uganda, have studied "tick fever" with this etiological theory in mind.[3] They found spirilla in the blood of every one of eight cases of "tick fever," although the parasite was exceedingly rare in some instances. Daniels, quoted by Manson,[4] describes the violent symptoms as lasting "for nearly a week. . . . After that fever continues often for three or four weeks." This is certainly suggestive of the clinical course of relapsing fever. However, the acarus above mentioned can be but one of several carriers of the spirillum, since relapsing fever is not confined to the hemisphere producing ticks of this genus.[5]

[1] The italics are mine.

[2] Viz., *Ornithodorus savignyi*, Aud., and *O. moubata*, first discovered by Welwitsch in Angola, and described under the name *Argus moubata* by Murray in 1877. Neumann has described a third tick from South Africa, *O. Savignyi*, var. *capensis*. This latter is thought by some to be the same as *O. moubata*.

[3] *British Medical Journal*, November 26th, 1904, p. 1453.

[4] "Tropical Diseases," p. 714.

[5] Christy has seen a tick in South America which is very similar to *O. moubata*, *vide British Medical Journal*, September 19th, 1903, p. 653. *Cf.* also Brault, *Maladies des Pays*, Chauds, p. 292.

The "Ocihopio" tick is very common in this district (I have found as many as a hundred in an hour in an old native hut), although relapsing fever is rare. The natives here, when questioned on the subject, say that the bite of the tick gives rise to no disease, except keloids. However, the Bihéan is slow to argue from cause to effect, *e.g.*, he does not connect the larvæ, pupæ and imagines of mosquitoes, &c., and other observers report several tribes who do ascribe "tick fever" to the bites of ticks.

The species of *Ornithodorus* common here is of a yellowish-brown colour when small and greenish-brown when older. The shell which is cast when the tick moults is of a pale yellow colour. The chitinous covering has a rough appearance, due to its being covered with fine points.

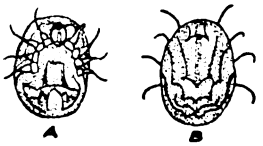


Fig. 2.—The "Ocihopio" tick, *Ornithodorus* sp. A, ventral surface. B, dorsal surface. Large adult, natural size.

The adults measure about 8 or 9 mm. long by 6 or 7 mm. broad, and are deeply furrowed, both on the dorsal and ventral surface. In the younger ones the furrows are much less marked on the ventral surface. The body is thick and rounded at the edges. There are no eyes. The fæces of the tick are white. Compared with other acari, the "Ocihopio" is fairly active. When placed on its back on a smooth surface, which gives no hold for its legs, such as a piece of glass, it has a curious way of changing the shape of its flattened body to a more cylindrical form to enable it to roll over. They hide by day and come out at night to bite. They bite man and all the domestic animals. They are very tough and difficult to kill.

An interesting fact in connection with these ticks is that they are sometimes attacked by a fungus, which destroys them. The disease generally begins at one edge of the tick and appears in the form of a light, almost white, spot which spreads. Later other foci appear in different parts of the body. The infected ticks are more sluggish than healthy ones.

[The tick has been sent to the British Museum for identification; the report will, it is hoped, be given in the next issue of the Journal.—Ed. *J. T. M.*]

NOTE ON THE OCCURRENCE OF FILARIÆ IN FIJIANS; FROM BLOOD EXAMINATIONS.

By the Hon. G. W. A. Lynch, M.B., B.S.Cantab.

During a period extending over thirteen months, the blood of 608 pure Fijian natives was examined at the Colonial Hospital. In every case specimens of the blood were taken both by day and by night, and examined shortly after they were prepared. The natives whose blood was examined were from every part of this group of islands, and really comprised all

the Fijians who were admitted to hospital during the period of observation—adults and children, males and females, but adult males form the majority, because there are always fewer females and children in the hospital admission lists.

In the 608 cases examined, filaria embryos were present in 156 cases, or 25·65 per cent. In 125 specimens of blood taken by day and 136 specimens taken by night, embryos were present, and 105 cases showed them in both day and night specimens; so that thirty-one cases showed filariæ in their night specimens only, and twenty cases in their day specimens only, or 5·09 per cent. and 3·28 per cent. respectively. The embryos examined were similar to those of *Filaria nocturna* in all cases but one; and though in some cases it could be said that where found in both night and day specimens the embryos were in increased numbers in the former, this was by no means always the case; indeed, in some the very opposite condition prevailed, and it was very frequently noted that the number of embryos present was about equal in the blood examined by day or night. The one exception noted was that of a female patient from the province of Lau, in the windward part of the group, whose blood showed undoubted embryos of *Filaria perstans;* this was found on all occasions on which her blood was examined.

These patients were, of course, admitted to hospital for all kinds of disease; but some were admitted for the acute febrile attacks which are of common occurrence in Fijians who are filarial—there were sixteen of these in all. These attacks of "fever" are so common amongst the natives that they are not as a rule in the habit of seeking hospital assistance for this complaint. Fifteen cases were admitted for abscesses of various parts of the body, which had resulted from the lymphatic swellings also common in filarial subjects, and in all these cases the embryos were found in the blood. Four cases of inflamed glands in the axilla or groin were admitted in the period under notice, which were also of filarial origin and showed embryos in the blood. (In this connection it may be noted that of course no account is taken of the large numbers of ordinary abscesses or inflamed glands due to other ascertained causes.)

During the period of observation thirteen cases of advanced elephantoid enlargements, either of scrotum or other parts of the body, were admitted; of these eleven showed no embryos in their blood, but two cases showed them without any doubt whatever.

In all, 119 females were examined, twenty-one cases showed embryos in both night and day specimens, and four cases in night specimens only; 489 males were examined, so that 21 per cent. of women were infected and 26·78 per cent. of men; the difference may be accounted for by the much smaller number of women examined. Only eight cases of children under thirteen or fourteen years old were examined, and these in no case showed any sign of disease.

The following table shows the various provinces of Fiji from which these cases came.

Making due allowance for differences in the numbers from the various provinces, it appears that the prevalence of this disease is about equally great in all parts of the group; it does not seem possible from the table to say that it is found more in the coast provinces than those inland. As a matter of experience, moreover, most of those patients who came from essentially inland provinces live in those parts of such provinces which have a fringe of sea-coast.

Province	No. of Cases Examined	In which Filaria were found	Percentage	Remarks
Rewa	46	9	19·56	River Delta.
Tailevu	60	19	31·66	Coast and highland.
Ra	20	4	20·00	Coast and highland.
Ba	16	4	25·00	Coast and highland.
Nadroga	20	6	30·00	Coast and highland.
Serua	25	3	12·00	Coast and highland.
Naitasiri	12	1	8·33	Inland.
Colo East, West and North	26	8	30·76	Mainly highland.
Cakaudrove ..	34	8	23·52	Mainly island and coast.
Lomaiviti	107	22	20·56	Island archipelago.
Bua	31	16	51·61	Coast and highland.
Macuata	14	3	21·42	Coast and highland.
Lau	105	24	22·85	Archipelago.
Kadavu	76	27	35·52	Island.
Namosi	5	0	..	Mainly highland.
Unspecified ..	11	2	18·18	—
Total ..	608	156	25·65	—

THE EFFECT OF DRAINAGE AND OTHER MEASURES ON THE MALARIA OF KLANG, FEDERATED MALAY STATES.

(Second Report.)

By Malcolm Watson M.D.Glas., D.P.H.Cantab.

District Surgeon, Klang, Federated Malay States.

On November 16th and December 1st, 1903, in the Journal of Tropical Medicine, I published an account of the anti-malaria works undertaken at Klang and Port Swettenham under the above title, and gave the results obtained up to June, 1903. Since then the work has been steadily carried on with increasingly satisfactory results, and I now propose to bring the account of these up to date.

At Klang the total expenditure to date is $26,000.[1] The area affected by the operations is about 332 acres, 25 acres of virgin jungle (evergreen) and 80 acres of dense secondary growth, in places 30 or 40 feet high, have been cleared, and 22 acres of permanent swamp have been drained. In addition, it was considered advisable to drain 16 acres of permanent swamp lying in a narrow strip along but outside of the original town boundary. The areas cleared are mainly under grass, the vote for up-keep having been raised from $750 to $1,800 per annum. At Port Swettenham the filling-in of the lower-lying areas has necessarily cost much, and the total amount spent has now reached $59,000. It was considered better to spend a large sum in obtaining solid ground useful

[1] $1 British = approximately 2 shillings sterling.

as a town site than to multiply drains to the extent that would have been necessary had less filling in been done, although the latter course would have been much cheaper in the first instance. The whole area, 104 acres, is under grass.

Results.

As before, I will compare the remainder of the district with the two towns in which the experiments in anti-malarial sanitation have been carried out.

I am aware of nothing which could have influenced the following statistics of the past four years, for the conditions both in the district and in the towns have been identical, except for the introduction of a water supply and the drainage works in the two towns. As will be seen, malaria has practically, if not absolutely, disappeared from the two places which in former years were probably the most unhealthy in the whole district, while the remainder of the district remains much as it was.

Malaria Treated at the Klang Hospital.

Since 1901 the number of cases treated has greatly diminished.

Table showing the number of cases of malaria treated at the Klang Hospital, and their percentage to the number treated for all diseases :—

Year	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Outdoor ..	172	479	730	554	694	668	737	965	364	245	240
Indoor	91	112	158	128	163	251	467	807	403	219	298
Total ..	263	591	888	682	857	919	1204	1772	767	464	538
Percentage ..	20·4	28·9	25·0	19·7	25·2	20·2	24·9	38·8	20·4	12·1	11·11

The decrease shown is striking, and the following table enables one to appreciate its cause.

Table showing the residence of malaria cases admitted to Klang hospital :—

	1901				1902			1903			1904		
	Klang	Klang and Pt. Swettenham	Pt. Swettenham	Elsewhere	Klang	Pt. Swettenham	Elsewhere	Klang	Pt. Swettenham	Elsewhere	Klang	Pt. Swettenham	Elsewhere
Jan. ..	24	..	3	8	32	18	24	6	5	15	6	1	9
Feb. ..	17	..	0	9	17	10	18	3	0	4	0	0	9
Mar. ..	27	..	3	7	19	2	15	8	2	11	1	0	5
April ..	33	..	4	10	7	6	13	1	1	7	1	0	11
May ..	31	..	0	14	10	8	15	5	3	13	4	0	32
June ..	36	..	5	19	10	1	13	2	2	16	4	1	19
July ..	26	..	9	16	9	3	19	8	1	16	1	1	18
Aug. ..	13	..	15	15	5	4	20	3	0	10	1	0	18
Sept. ..	11	..	13	17	9	9	17	2	1	7	2	1	27
Oct. ..	24	31	34	28	8	3	17	3	1	19	3	0	33
Nov. ..	56	39	79	33	2	3	20	1	2	20	1	0	37
Dec. ..	36	18	23	21	1	3	13	6	3	12	4	0	48
Total..	334	88	188	197	129	70	204	48	21	150	28	4	266

Or to summarise—

Residence	1901	1902	1903	1904
Klang and Pt. Swettenham[1]	610	199	69	32
Elsewhere	197	204	150	266
Total	807	403	219	298

Situated in a malarious country as Klang and Port Swettenham are, their inhabitants are liable to infection should they spend a night away from home in the neighbourhood, and, on the other hand, imported cases of malaria are frequent in both towns. A difficulty arises in connection with the classification of the residence of new arrivals, who giving a history of malaria shortly before coming to Klang or Port Swettenham, develop symptoms again after they have been in the town more than eight days, which is generally regarded as the minimum incubation period of naturally acquired malaria. Such attacks are probably relapses, yet they might be the result of fresh infection acquired after arrival. Consequently, in order not to underestimate the number of cases contracted in Klang and Port Swettenham, and thus to overestimate the benefits derived from the anti-malaria works in the foregoing table, a residence of eight days free from symptoms within the towns brings the case under the heading "Klang and Port Swettenham." In the light of these remarks, it is not uninteresting to note that of the thirty-two cases recorded from the two towns in 1904, eight were probably imported cases having definite histories of malaria before arrival, three[2] were Klang residents, who nine to twelve days before admission had slept out of the town, and eight were rickshaw pullers who frequently sleep away from home after a long journey, instead of returning to town.

The following table is evidence of a considerable saving of life.

Table showing the residence of fatal malaria cases admitted to Klang Hospital :—

Residence.	1901	1902	1903	1904
Klang and Pt. Swettenham ..	52	9	5	0
Elsewhere	19	23	14	27
Total	71	32	19	27

[1] In 1901 a certain number lived in Klang and worked at Port Swettenham, *e.g.*, loading coolies. Others stayed some nights in Klang and some in Port Swettenham. Such cases are entered under the heading "Klang and Port Swettenham."

[2] One was my boy. On October 28th, 1904, I found the man in charge of the Resthouse at Jugra had malignant malaria, a severe crescent infection. Despite a warning my boy slept in the man's room. From November 6th to the 9th the boy had headache, on the 10th and 11th his temperatures were 103·8 and 104° F. respectively, and on the 12th malignant parasites were found in his blood.

Mortality of the District of Klang.

As the population of the district increased 198·87 between 1891 and 1901, and is still rapidly increasing, the mortality bills naturally increased, but since 1901 there has been a diminution.

Table showing the number of deaths registered in the district of Klang :—

Year ..	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Deaths ..	206	842	511	466	475	538	780	998	547	543	612

When the register is further analysed the decreased mortality is found to have taken place in the two towns.

Tables showing the causes and places of deaths registered in the district, corrected for deaths occurring in hospital.

I.—Deaths in Klang and Port Swettenham (Population about 4,000 in 1901 and Increasing).

Year	1900	1901	1902	1903	1904
Fever	259	368	59	46	48
Other Diseases	215	214	85	69	74
Total	474	582	144	115	122

II.—Deaths Elsewhere in the District (Population about 14,000 in 1901 and Increasing).

Year.	1900	1901	1902	1903	1904
Fever	173	266	227	230	286
Other Diseases	133	150	176	198	204
Total	306	416	403	428	490

The above tables bring out in a convincing fashion that subsequent to the anti-malaria works there has been a great reduction in the number of deaths recorded in Klang and Port Swettenham, while in the district outside of the towns the number of deaths still increases ; and it is evident, too, from the first table that the improvement is due mainly to the great reduction in the prevalence of malaria. Striking as this appears from the tables, the actual reduction has been, I believe, still greater, for among the deaths recorded as due to "other diseases" many were doubtless due to malaria, for in a malarious country the native informant is prone to report deaths really due to malaria as due to diarrhœa, dysentery, convulsions in children, or other terminal complications of malaria. Indeed, natives so frequently fail to recognise that their illnesses are connected with malaria that it has been found necessary to examine microscopically for malaria parasites the blood of all cases of diarrhœa, dysentery, anæmia, cardiac and renal diseases admitted to Klang Hospital, quite irrespective of whether the patient says he has had fever or not. That the native informant of death should make a mistake can, therefore, easily be understood. At the same time, the removal of malaria to such extent as has occurred has undoubtedly improved the general health of its inhabitants, and those who in former years would have succumbed to "other diseases," simply because they were in a low state of health consequent on malaria, are now able to resist the attacks of such "other diseases," or if attacked to overcome them and recover.

Although a good water supply was brought into the towns in December, 1902, and greater attention is being paid to general sanitation, I cannot help feeling that the improvement has been due mainly to the diminution of malaria. As all deaths, with the exception of those certified by myself (the only qualified practitioner within twenty miles of Klang), are registered in accordance with the report of the friends, I regard the above tables as an "unsolicited testimonial" unconsciously given by the native community to the efficacy of the anti-malaria works in Klang and Port Swettenham.

Children Infected with Malaria.

Unfortunately, during 1901, no examination of children was made to ascertain the percentage infected, but that they suffered severely I had abundant evidence, both in my official and private practice. The disease frequently ran through a household, as an example of which I may mention that on one occasion (April 15th, 1901) when called to the Astania, I found no less than 15 children suffering from malaria. In 1901 there were in Government quarters at Port Swettenham 13 children under the age of ten ; of these, 9 contracted malaria within three and a half months of their arrival.

Table showing the percentage of children infected with malaria in various places in the district of Klang, November and December, 1904 :—

Place	Nation	Age 2 years and under		Age over 2 and under 5		Age 5 years and under 10		Total		
		Examined	Infected	Examined	Infected	Examined	Infected	Examined	Infected	Percentage Infected
Klang ..	Mixed ..	64	0	71	0	38	1	173	1	0·57
Port Swettenham	Mixed ..	27	0	29	0	31	1	87	1	1·14
Batu Tiga	Mixed ..	7	0	9	0	10	3	26	3	11·5
,,	Tamils ..	4	4	5	2	7	4	16	0	62·5
,,	Mixed ..	1	1	2	2	0	0	3	3	100·0
Damansara	Tamils ..	15	8	5	3	21	5	41	16	37·8
,,	Tamils ..	3	3	2	2	7	7	12	12	100·0
Kapar ..	Tamils ..	11	2	4	3	40	2	25	7	28·0
,, ..	Malays ..	2	0	6	1	4	0	12	1	8·3
,, ..	Tamils ..	3	0	4	0	2	0	9	0	0·0
,, ..	Tamils ..	5	2	3	1	2	0	10	3	30·0
Bukit Rajah	Malays ..	16	3	23	3	20	5	59	11	18·6
,,	Tamils ..	11	6	10	2	21	10	42	18	42·8
,,	Banjarese	4	3	10	7	10	5	24	15	62·5
T. Gadong	Mixed ..	5	0	7	0	7	2	19	2	10·5
		87	32	90	26	121	43	298	101	
		= 36.78%		= 28·88%		= 35·53%		= 33·89%		

In 1904, selecting November as the most unhealthy month of the year, I personally examined the blood of a number of children under ten years of age, taken without selection, except as to place. Every child at Port Swettenham, including those in the native houses as far as the fourth mile on the Klang road was examined. At Klang the children were from all parts of the town. As a "control" thirteen groups of children in and around the outlying villages of Batu Tiga, Damansara, Bukit Rajah, Telok Gadong and Kapar were examined.

Many of the children on estates were actually under treatment with quinine, which necessarily lowered the percentage of cases in which parasites were found.

The thirty-two children in Government quarters at Port Swettenham have been twice examined. On the second occasion all were free from infection.

As if to emphasise the freedom from infection of the proper residents of Klang and Port Swettenham, the two cases found there during the examinations were clearly imported cases. The one with benign tertian parasites came from the distant village of Cheras, where she had had fever off and on for four months. Two days after her arrival with her father, a police sergeant, she had a relapse. She was seen by me ten days after her arrival. The other, with crescents, belonged to a travelling company of native players. He had been fifteen days in Klang on the date of examination, but gave a definite history of fever shortly before arrival, and said he had had no fever while in Klang.

According to this test, Klang and Port Swettenham appear to be absolutely free from malaria, except such as is imported, and stand out in striking contrast to the rest of the district.

Improved Health of Government Officers.

The following table shows how much Government and its officers have benefited.

Table showing the number of certificates and of days of sick leave granted to Government officers resident in Klang and Port Swettenham on account of malaria :—

	1901.	1902.	1903.	1904.
Certificates ...	236	40	23	14
Days of leave...	1,026	198	73	71

No less than forty of the seventy-one days in 1904 were granted to two officers who contracted the disease in Jugra. Excepting these, no officer resident in Klang or Port Swettenham has suffered from malaria since July 12th, 1904.

The following figures apply to Port Swettenham and show how rapidly the new population was stricken when the port was opened in September, 1901. From the daily house-to-house visits made by the Deputy Health Officer, I had an unusually good opportunity of noting the progress of the epidemic among those living in official quarters.

Table showing the number of persons living in Government quarters prior to October 31st, 1901, attacked by malaria within certain periods after arrival :—

Days after arrival ..	9-18	19-28	29-38	39-48	49-58	59-68	69-78	79-88
No. of persons attacked	13	12	20	20	16	20	8	1

The general dosing with quinine and free petrolage in the third month after the opening of the port doubtless assisted in the rapid diminution of the epidemic.

It can be readily understood that when the official population was being attacked at the above rate the work of the port was considerably interfered with. It is also evidence of the extreme unhealthiness of the place. The next table shows a marked improvement.

Table showing the number of attacks (including relapses) among persons living in Government quarters at Port Swettenham 1901 only, from September 15th to December 31st) :—

Year	1901	1902	1903	1904
No. of attacks	188	98	35	6

In all the five cases in 1904 (one policeman had two relapses) there was a clear history of malaria before arrival, and there is little doubt these were all imported cases.

The following and final figures I cannot help regarding with less satisfaction, nor can I quite decide whether they should be adduced as proof of the success of the measures against malaria or reckoned in their cost. In 1901 the book value of my private practice from attendance on malaria patients resident in Klang and Port Swettenham was $734. In 1904 I had not a single patient with malaria resident in the two towns.

Remarks.

It is unnecessary, I think, to multiply figures. In whatever direction one turns it is plain that the two areas which were so malarious in 1901 are now practically, if not absolutely, free from the disease, and that the district surrounding these two areas remains much as it was. Nor is the improvement matter for wonder, for I think it no exaggeration to say that 99 per cent. of the breeding places of Anopheles of all species have been abolished and the ground water has within the two towns been lowered considerably, everywhere below the surface of the soil, and it is no new discovery that drainage abolishes malaria.

Mosquitoes.

Although I have said nothing of the mosquitoes of Klang and Port Swettenham, the scientific side of the problem has not been neglected. Dr. G. F. Leicester, of the Institute for Medical Research, Kuala Lumpur, of which Dr. Daniels is now Director, has been engaged for over two years on an exhaustive study of the mosquitoes of Selangor. At Klang he identified six and at Port Swettenham seven species of Anophelines, viz., *M. Rossii*, *M. barbirostris*, *M. albotæniatus*, *M. congregata*, *N. nioipes*, *N. maculatus* and *C. Koetin*, while in the surrounding district *Anopheles Treacherii* and a new Psorophora are to be found. Until, however, his observations on their powers of carrying malaria under natural conditions are completed, it will be impossible to apportion the blame among the various species. Fortunately at

Klang and Port Swettenham the same system of drains abolished the breeding places of both the dirty and clean breeders, and indeed of the breeding places of all mosquitoes which breed in natural collections of water in the ground.

Organisation and Methods.—In Klang no hot or cold season even temporarily stops the mosquito pest. This moist, equable climate, with its rainfall of about 100 inches per annum spread over all the months of the year, and the swamps, wells and ditches breeding the various species of Anophelines in abundance without intermission, appeared at first sight to make the task of eradicating malaria well-nigh hopeless. In selecting the method of campaign certain circumstances had to be taken into consideration. The active co-operation of the native community could not be expected. But the Sanitary Board had power to compel the owner to drain or fill in swampy land, or obnoxious collections of water, and to clear away undesirable vegetation in private property. This power was used largely in 1901. The acreage of swamp, the heavy rainfall, and the amount of supervision required, apart altogether from its cost and temporary efficacy, prohibited the use of petroleum. Again, with an area so extensive, subsoil water so high, and aquatic vegetation so dense, the idea of sweeping out or repeatedly dealing with individual collections of water, could not be entertained. The ordinary duties of the District Surgeon, who is in charge of the districts of Kuala Langat and Kuala Selangor, in addition to Klang, limited the amount of supervision he could have given to these methods. Clearly, then, only by lowering the ground water through draining and filling in, would the swamps be abolished and the formation of pools of rain-water be prevented. And this had the great advantage of being permanent and costing little to up-keep, an important point, as sanitation is so largely a financial question. Thus it came out that after the breeding places had been defined, the engineers of the Public Works Department designed and carried out the drainage schemes which abolished them, and to the engineers is due the credit of so successful an issue. Except for the expenditure on petroleum and quinine for about two months at Port Swettenham, in 1901, the whole of the money has been spent on permanent work, which, being carried out by the ordinary district staff, has cost nothing for supervision. The burden has really fallen on the engineer, and the medical officer has been able to carry on his departmental duties without interruption.

Expenditure.—Lest the comparatively large sums spent at Klang and Port Swettenham should deter less wealthy communities from embarking on anti-malaria works, I venture to express a few opinions on this subject. I believe that in both towns an equally satisfactory result as regards malaria could have been obtained at much less expenditure, but local circumstances led to the adoption of the more expensive methods in order to give greater permanence to the works. At Port Swettenham, which was a low-lying mangrove swamp, a muliplication of the main and subsidiary drains would have given the same results as regards malaria, but a large number of open drains would have had many disadvantages in a town, as compared with an estate, and subsoil drainage is rarely employed here. It was decided therefore that "filling in" and "levelling up," although more expensive, would make the land more suitable for a town site than simply cutting numerous drains through uneven ground. Again, at Klang, as the available fall for the drains was very small, being limited by certain railway culverts with which it was undesirable to interfere, and as certain of the drains were also town sewers, I wished to have as much of the system as possible with a concrete invert. Yet I believe that had all the railway culverts been lowered, as some have been, earth drains would have sufficed to stamp out malaria, and would have cost much less.

Immigration of Mosquitoes.—A definite improvement in the health of Klang was evident when only the swamps nearest to the main groups of houses had been dealt with, and while other swamps within the town were still untouched. The mosquitoes from these did not appear to travel any distance, and there has been no evidence of dangerous immigration of Anophelines from the extensive breeding places which until the middle of 1904 existed just outside the town boundary, and some of which still remain. Yet the species breeding in these swamps were identical with those breeding within the town. In other words, breeding places are being *permanently* abolished, progress in the work is associated with progressive improvement in health, which is exactly what might have been anticipated. I do not, however, see any way to measure the percentage of mosquito reduction necessary to give a certain reduction in malaria. Finally, to the Sanitary Board of Klang praise is due for pursuing a definite policy of drainage. And in the frank manner in which the Government has accepted and applied the results of scientific research, it has set an example worthy of imitation by others. Not in the drainage of Klang and Port Swettenham alone has the Government of Selangor undertaken the campaign against malaria. The hospitals of Klang, Kuala Selangor and Kuala Langat have each a mosquito-proof ward, and in all the hospitals in the State a mosquito curtain is provided for each malaria patient. Any Government officer can have a mosquito-proof room fitted up in his house simply for the asking; all police are provided with mosquito curtains as part of their equipment; quinine can be obtained at cost price from Government all over the State; and Government has provided large sums to bind, drain, reclaim, and fill in swamps in various towns in the State, and the work is rapidly progressing. All this is exclusive of the large sums annually provided for ordinary sanitary works. I think, therefore, I may fairly claim for the Government of Selangor the honour of being the first British Administration to follow Ross in an attempt to confer on those entrusted to its care the benefits of his great discovery.

MALAY REPORTS.—*Continued.*

Appendix A.

Return of In-Patients, various Hospitals in Negri Sembilan, 1903.

Hospital.	Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Percentage of deaths to total treated.	Percentage of deaths due to beri-beri.	Excluding those dying within 24 and 48 hours.	Percentage of deaths to total treated in hosp.
S'ban Pauper	160	2,771	2,931	2,401	16	49	241	224	8·2	7·7	5·8	16·02
,, General	—	15	15	13	—	—	1	1	6·6	..	—	—
,, Gaol	—	75	75	70	—	—	4	1	5·3	..	—	10·87
P. Dickson	62	263	325	244	3	5	13	60	4	1·9	—	3·96
Jelebu	41	688	729	600	4	6	58	61	7·9	7·7	—	9·64
K. Pilah	27	626	653	556	1	2	46	48	8·8	5·6	7·04	4·83
Tampin	30	492	522	438	1	—	51	32	9·7	30	—	10·78
Total	320	4,930	5,250	4,322	25	62	414	427	7·8	7·09	—	—
Previous year	320	4,133	4,453	3,533	9	84	527	320	11·83	9·1	—	—

Appendix B.

Showing Diseases more commonly Treated, with Mortality.

Disease.	Cases.	Deaths.	Proportion per 1,000. Of deaths to cases (case-mortality.	Of particular diseases to all diseases.	Of deaths from particular diseases to all deaths.
Anæmia	86	8	93	16	19
Beri-beri	1,141	81	71	217	196
Debility	167	21	126	32	51
Diarrhœa	188	53	282	36	128
Dysentery	407	120	295	78	290
Fevers	738	26	35	141	63
Ulcers	973	6	6	185	14
Other causes	1,550	99	64	295	239
Total	5,250	414	972	1,000	1,000

Appendix C.

Annual Return of Nationality for Negri Sembilan Hospitals for 1903.

Nationality.	Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Number of beri-beri.	Number of deaths from beri-beri.	Number of beri-beri discharged and cured.	Percentage of deaths from beri-beri.	Percentage of deaths to total treated from all diseases.
Chinese	206	3,247	3,453	2,744	15	55	291	348	1,135	81	885	7·1	8·4
Tamils	95	1,115	1,210	1,035	6	5	104	58	1	—	1	—	8·5
Malays	12	239	251	233	4	2	8	4	4	—	4	—	3·1
Singhalese	—	47	47	47	..								
Sikhs	7	206	213	192	—	—	7	14	—	—	—	—	3·2
Bengalese	—	4	4	4									
Javanese	—	2	2	2									
Eurasians	—	4	4	4									
Europeans	—	10	10	9	—	—	1	—				—	10
Japanese	—	7	7	6	—	—	1	—	1	—	1	—	14·2
Other nations	—	49	49	44	—	—	2	3	—	—	—	—	4·07
Total	320	4,930	5,250	4,322	25	62	414	427	1,111	81	891	7·09	7·8

Appendix D.

Return of Out-door Patients treated from 1899 to 1903.

Dispensary.	Number of Visits. 1899.	1900.	1901.	1902.	1903.
Seremban	1,966	1,977	2,631	2,676	1,878
Port Dickson	455	782	680	446	510
Jelebu	623	793	656	1,766	1,308
Kuala Pilah	3,344	1,015	1,801	1,011	1,985
Tampin	1,804	1,922	1,734	1,547	1,255
Total ..	8,182	6,489	7,502	7,446	6,936

Appendix E.

Table showing actual number of Sick Convicts treated in the Prison Hospital during the years 1899, 1900, 1901, 1902 and 1903, case mortality, and sickness rate per thousand of strength.

Years.	Total prisoners during the year.	Total treated.	Total deaths.	Case mortality per 1,000.	Sickness rate per mille of prisoners.
1899	434	92	4	43	212
1900	922	59	3	50	64
1901	898	50	5	100	55
1902	831	46	5	108	55
1903	1,073	75	*4	53	74

Diarrhœa	1 ..	1 month and 15 days' duration.
Dysentery	1 ..	3 days' ,,
Pulmonary Phthisis	1 ..	3 months' ,,
Undiagnosed	1 ..	1 month' ,,

Appendix F.

Number of Patients treated in the State Hospitals, 1897 to 1903.

Year.	Total treated.	Total deaths.	Percentage of deaths.	Remarks.
1897 ..	3,324	284	8·5	Excluding those dying within 24 and 48 hours.
1898 ..	3,128	189	6·4	
1899 ..	4,007	184	4·5	
1900 ..	5,016	316	6·3	
1901 ..	5,280	366	6·93	
1902 ..	4,453	529	11·8	All cases included.
1903 ..	5,250	414	7·8	,, ,,

Appendix G.

Number of Beri-beri cases treated in the State Hospitals.

Year.	Total treated.	Total deaths.	Percentage of deaths.
1897 ..	1,033	88	8·5
1898 ..	603	41	6·7
1899 ..	1,193	55	4·6
1900 ..	1,749	48	2·7
1901 ..	1,104	45	4·0
1902 ..	881	81	9·1
1903 ..	1,141	81	7·09

Appendix H.

Return of Vaccination for the year 1903.

Station.	Number vaccinated.	Result. Perfect.	Modified.	Failed.	Not seen.
Seremban	138	112	6	15	5
Kuala Pilah	874	623	10	76	165
Tampin	1,114	1,041	2	58	13
Jelebu	247	234	—	9	4
Total ..	2,373	2,010	18	158	187

No. 6.—FEDERATED MALAY STATES.

RETURN OF DISEASES AND DEATHS IN 1903 AT THE GENERAL HOSPITALS AND GAOL HOSPITALS AT KUALA LIPIS AND PEKAN, THE DISTRICT HOSPITALS AT RAUB AND BENTONG.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	38	1	38
Anæmia	31	3	40
Beri-beri	140	35	157
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	1	—	1
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	33	5	35
Delirium Tremens	9	1	9
Dengue	—	—	—
Diabetes Mellitus	1	—	1
Diabetes Insipidus	23	11	25
Diphtheria	1	1	1
Dysentery	118	37	122
Enteric Fever	336	71	358
Erysipelas	2	1	2
Febricula	56	3	58
Filariasis	—	—	—
Gonorrhœa	15	—	16
Gout	—	—	—
Hydrophobia	7	2	7
Influenza	8	—	8
Kala-Azar	—	—	—
Leprosy	1	—	1
(*a*) Nodular	29	15	102
(*b*) Anæsthetic	55	32	178
(*c*) Mixed	104	45	246
Malarial Fever—			
(*a*) Intermittent	—	—	3
Quotidian	130	4	134
Tertian	34	1	39
Quartan	4	—	6
Irregular	2	—	2
Type undiagnosed	409	25	409
(*b*) Remittent	14	4	14
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	3215	576	3457
Malta Fever	—	—	—
Measles	20	—	20
Mumps	1	—	1
New Growths—			
Non-malignant	297	7	310
Malignant	256	33	263
Old Age	198	63	215
Other Diseases	1	1	1
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	24	13	26
Rachitis	—	—	—
Rheumatic Fever	5	—	5
Rheumatism	49	—	51
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	2	1	2
Septicæmia	48	22	48
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	3	—	3
Syphilis—			
(*a*) Primary	8	—	9
(*b*) Secondary	22	—	23
(*c*) Tertiary	166	6	177
(*d*) Congenital	23	3	26
Tetanus	64	32	66
Trypanosoma Fever	—	—	—
Tubercle—			
(*a*) Phthis Pulmonalis	964	267	1004
(*b*) Tuberculosis of Glands	41	14	42
(*c*) Lupus	22	—	22
(*d*) Tabes Mesenterica	16	4	24
(*e*) Tubercular Diseases of Bones	5	1	6
Other Tubercular Diseases	7	3	7
Varicella	—	—	—
Whooping Cough	10	1	10
Yaws	1	—	1
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	57	3	60
Circulatory System—			
(*a*) Valvular Disease of Heart	13	3	13
(*b*) Other Diseases	1	1	1
Digestive System—			
(*a*) Diarrhœa	110	30	113
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	182	5	185
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	34	16	35
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	79	11	83
(*g*) Cirrhosis of Liver	94	32	100
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	26	1	27
Ear	1	—	1
Eye	24	1	26
Generative System—			
Male Organs	970	5	1002
Female Organs	1708	44	1742
Lymphatic System	557	10	577
Nervous System	23	4	24
Nose	68	—	68
Organs of Locomotion	13	—	15
Respiratory System	114	29	117
Skin—			
(*a*) Scabies	7	—	7
(*b*) Ringworm	50	—	51
(*c*) Tinea Imbricata	1	—	1
(*d*) Favus	—	—	—
(*e*) Eczema	15	—	16
(*f*) Other Diseases	191	—	207
Urinary System	525	82	547
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	1	—	1
(*c*) Other Injuries	140	9	145
Parasites—			
Ascaris lumbricoides	1	—	1
Oxyuris vermicularis	1	—	1
Dochmius duodenalis, or Ankylostoma duodenalis	1662	272	1775
Filaria medinensis (Guinea-worm)	10	—	10
Tape-worm	—	—	—
Poisons—			
Snake-bites	10	1	11
Corrosive Acids	2	—	2
Metallic Poisons	8	—	8
Vegetable Alkaloids	21	2	21
Nature unknown	15	1	15
Other Poisons	4	—	4
Surgical Operations—			
Amputations, Major	536	30	552
,, Minor	4	—	4
Other Operations	178	—	183
Eye	—	—	—
(*a*) Cataract	68	—	73
(*b*) Iridectomy	19	—	20
(*c*) Other Eye Operations	57	—	63

Medical Report on the State of Selangor for the Year 1903.

By E. O. A. TRAVERS.

State Surgeon.

Population.

The estimated population of the State on December 31st, 1903, was 216,923. Two thousand two hundred and two births and six thousand six hundred and eighty-nine deaths were reported during the year.

The birth-rate calculated as for the population of the State at the end of the year was 10·151 per mille, and the death-rate 30·835 per mille.

Meteorological Condition of the Seasons.

The total rainfall registered at Kuala Lumpur was 89·89 in., as against 116·40 in. 1902.

As is usually the case, the heaviest rainfall occurred in the last three months of the year.

The month of July was an exceptionally dry one, only 0·20 in. having been recorded, as against an average for the last twenty-five years of 3·94 in.

The mean temperature was 80·1° F., as against 81° F. in 1902. The maximum temperature registered at Kuala Lumpur was 93° F. and the minimum 68° F.

Prevalence of Sickness and Relative Mortality in Different Seasons.

No special effect of season on the health of the inhabitants or on the relative mortality was noted.

Number of Patients Treated in the Various Hospitals and Infirmaries.

The number of patients treated, with deaths and death-rate during the last five years, is shown in the following table :—

Year.	No. treated.	Deaths.	Death-rate.
1899	12,371	1,437	11·61
1900	17,963	2,419	13·43
1901	21,351	2,797	13·10
1902	18,173	2,087	11·48
1903	14,425	1,872	12·97

There has been a reduction of 3,748 in the number of cases treated as in-patients as compared to the total for 1902. This is mainly due to the closing of the railway hospital at Kajang, where 1,822 patients were treated in 1902, the vastly improved health of the prisoners in the Pudoh Gaol, where only 295 cases were treated, as against 1,169 in 1902, and a reduction of 686 in the number of cases treated in the Ulu Selangor Hospitals.

The number of deaths occurring in all hospitals was 1,872, as against 2,087 in the previous year.

This is the lowest number of deaths in hospital since 1899, which is satisfactory in view of the steady increase in the population of the State.

The death-rate for all hospitals was 12·97 per cent., as against 11·48 per cent. in 1902.

Two hundred and forty-nine patients were admitted in a practically moribund condition and died within forty-eight hours of coming to hospital.

Most of these patients were brought in by their friends in order to avoid the expense and inconvenience of burial.

Prevailing Diseases.

The following diseases caused the greater amount of sickness and mortality :—

Disease	No. Treated		Deaths		Death-rate	
	1902	1903	1902	1903	1902	1903
Malarial fevers ..	2977	1980	174	153	5·84 %	7·72 %
Beri-beri	2673	1912	325	351	12·15 ,,	18·35 ,,
Diarrhœa.. ..	1515	1074	528	359	34·85 ,,	32·42 ,,
Dysentery ..	973	638	320	229	32·86 ,,	35·89 ,,
Pulmonary diseases	850	811	241	266	28·35 ,,	32·78 ,,

Bowel Complaints.

I am glad to be able to report a large reduction both in the number of cases treated and the number of deaths from this form of disease.

The figures for the last three years are as follows :—

Year.	Total treated.	Deaths.	Death-rate.
1901	3,826	1,143	29·8 per cent.
1902	2,488	848	34·0 ,,
1903	1,712	588	34·3 ,,

Improvements in water supply, drainage and general sanitation are, I consider, mainly responsible for the marked decrease in the number of cases of this group of diseases.

Malarial Fevers.

The returns relating to malaria also show very marked improvement.

Year.	Total treated.	Deaths.	Death-rate.
1901	5,445	322	5·9 per cent.
1902	2,977	174	5·8 ,,
1903	1,980	153	7·7 ,,

The great reduction in the number of cases of malaria occurring in the State may be attributed to a very great extent to the sanitary work carried out by Government at Klang and Port Swettenham.

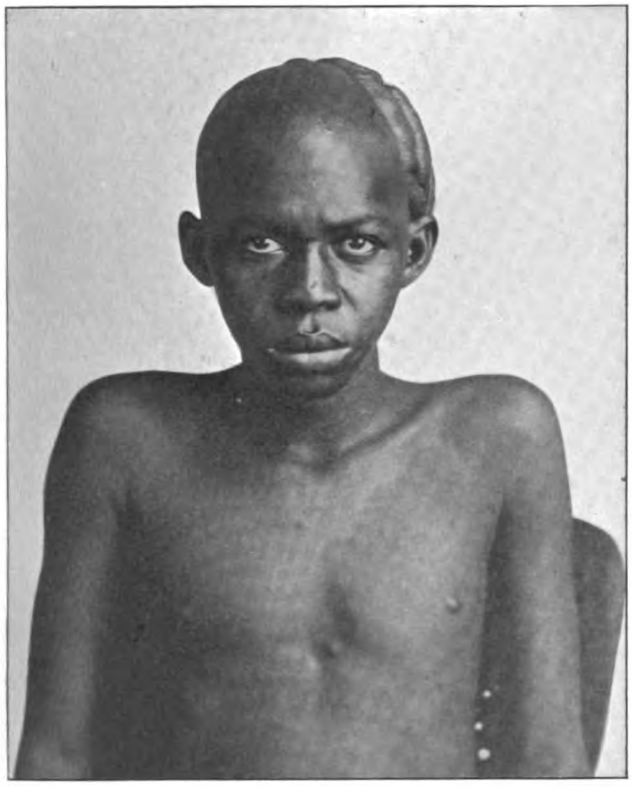
There is little doubt but that in former years the Klang district acted as a distributing centre for malaria, persons suffering from the disease carrying it about the State, and through the agency of mosquitoes giving the disease to others, and often introducing it into districts where it previously seldom occurred.

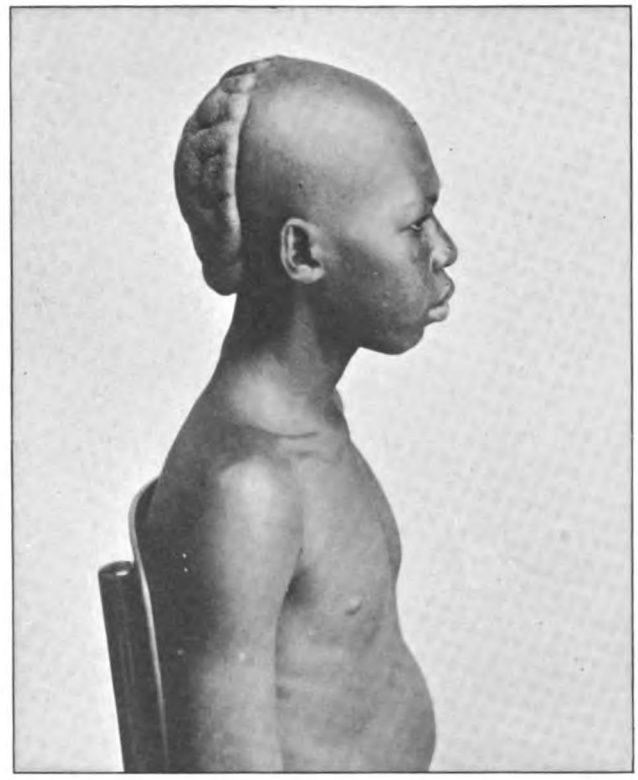
That the decrease in malaria in the Klang district, which was the subject of special report to Government, has steadily continued, is well shown by the following figures.

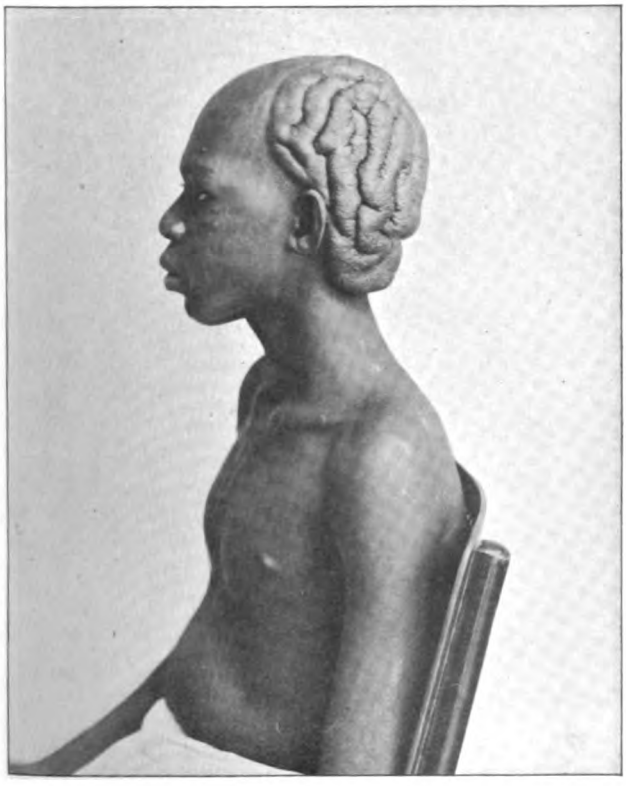
Cases of Malaria with Number of Deaths from that Disease at District Hospital, Klang, during the Last Four Years.

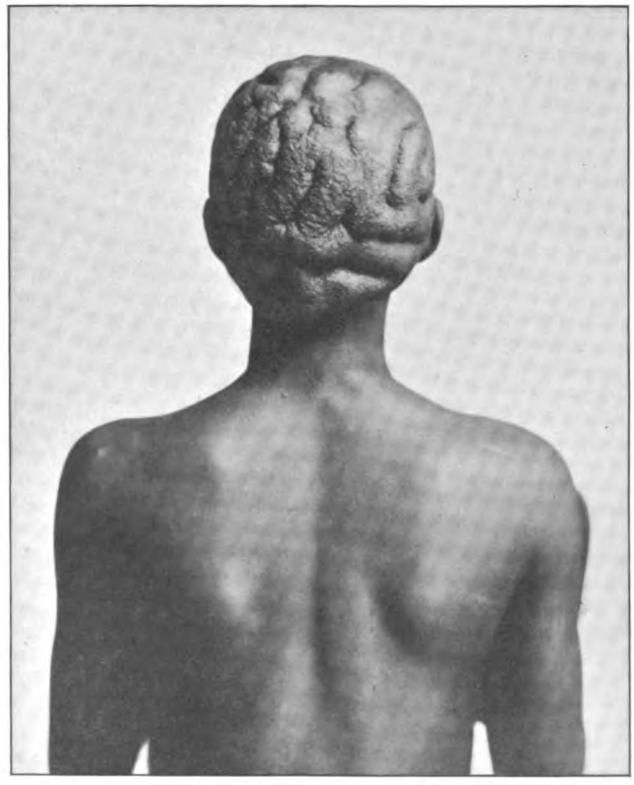
Year.	Cases treated.	Deaths.	
1900	477	31	
1901	820	70	
1902	417	32	Sanitary work carried out at Klang and Port Swettenham.
1903	230	19	

The anti-malarial campaign which was carried out with such success at Klang and Port Swettenham in 1902 has been continued during the past year; the work taken in hand being more especially permanent









TO ILLUSTRATE ELEPHANTIASIS OF THE SCALP.

By G. Allardice Macdonald, M.B., C.M.Edin.

Bale, Sons & Danielsson, Ltd.

drainage. A large tract of mangrove swamp at Port Swettenham has now been converted into well-drained and flourishing pasture.

Beri-beri.

The number of cases of this disease treated during the year was 1,912, with 351 deaths, as against 2,673 with 325 deaths in the previous year, the percentage of deaths being 18.3 and 12·15 respectively. This marked difference is mainly due to the comparative absence of beri-beri from the Pudoh Gaol during the past year.

Deducting the numbers treated in the Pudoh Gaol the figures are as follows:—

Year.	Total cases.	Deaths.	Percentage of deaths.
1902	1,772	308	17·4
1903	1,867	349	18·9

Thus, excluding the returns from the Pudoh Gaol, there has been a slight increase of beri-beri with a corresponding increase in death-rate.

This was most marked at the District Hospital, Kuala Lumpur, where 901 cases were treated, with 192 deaths, as against 839 with 158 deaths in the previous year.

As in former years, the difference between the returns relating to beri-beri in purely mining districts as compared to those in mainly agricultural districts is well marked:—

	Total treated.	Deaths.	Percentage of deaths.
Kajang	175	11	6·28 agricultural.
Klang	31	3	9·67 ,,
Kuala Kubu	164	66	40·45 mining.
Sungei Besi	71	13	18·31 ,,

The death-rate from beri-beri at Kuala Kubu is extraordinarily high, and is being carefully enquired into.

The comparative absence of beri-beri from the agricultural districts is, in my opinion, mainly due to the scattered nature of the population. This favours the theory that beri-beri is an infective disease, the coolies when crowded together in mining kongsis being much more liable to be attacked than the gardeners and agriculturists, who mostly live in small separate huts.

Pulmonary Disease.

The number of cases treated for diseases of the lungs was 811 with 266 deaths, as against 850 cases with 241 deaths in the year 1902. Of the 266 deaths 177 were due to phthisis.

The fact that the number of deaths due to disease of the lungs exceeded that caused by malarial fevers or dysentery shows how necessary it is that the question of overcrowding in the towns, with the accompanying evils of bad ventilation and deficient light in the houses, should receive the careful attention of Government.

The difficulty is likely to become a very serious one, and the subject of phthisis was discussed at the Medical Congress held in 1902, when certain recommendations were made to Government with a view to checking the spread of this disease.

Venereal Disease.

The number of cases of venereal disease treated in hospital was 847 with 16 deaths, as against 844 with seven deaths in 1902.

Zymotic Disease.

Plague.—A small outbreak of plague occurred at Kuala Kubu, causing about 15 deaths. Of these cases three were treated at the District Hospital, Kuala Kubu, and two at the District Hospital, Kuala Lumpur. All the cases proved fatal.

Small-pox.—One case of small-pox was removed from a ship calling at Port Swettenham and was treated at the Quarantine Station.

Cholera.—A few cases of cholera occurred at Rawang in the mining kongsi; none of the cases were admitted to hospital.

Vaccination.

Most districts in the State were visited by the vaccinator during the year.

The number of persons vaccinated during the last three years were as follows:—

Year.	Number vaccinated.	Successful.	Failed.	Not seen.	Per-centage.
1901	2,297	2,074	24	199	89·89
1902	2,774	2,748	20	6	99·09
1903	3,236	3,176	18	42	98·14

Saigon buffalo lymph was used in all cases and was satisfactory in every way.

Infants of all nationalities are readily brought to the various centres appointed, and the advantages of vaccination are more thoroughly appreciated in Selangor than in England. The necessity for re-vaccination is, however, not understood, and although the infant population is now well protected, it is quite possible that large numbers of adults might be attacked under circumstances favouring the spread of the disease. Although not willing to be revaccinated under ordinary circumstances, I find that no objection to revaccination is raised by adults of all nationalities should a few cases of small-pox occur in their immediate neighbourhood.

Out-patients.

The number of persons applying for treatment as out-patients at the various hospitals and infirmaries was 36,174, as against 38,476 in 1902.

The District Hospital, Kuala Lumpur.

This hospital was throughout the year under the care of District Surgeon Dr. A. J. McClosky, who reports as follows:—

"*Admissions.* — Four thousand and forty-eight patients were admitted during the year, which, with 282 remaining from the previous year, gives a total treated of 4,330. The admissions exceeded those of last year by 16, while the total treated was less by 48.

"The following table shows the total treated for each of the last five years:—

Year.	Total treated.	Year.	Total treated.
1899	3,584	1902	4,378
1900	3,033	1903	4,330
1901	5,086		

"The following diseases caused the largest number of admissions, viz.: Beri-beri 801, ulcers 575, rheumatism 436, malarial fever 245, dysentery 243, diarrhœa 156, phthisis 142.

"The condition of many of those admitted was, as in previous years, very unsatisfactory, many cases being hopeless from the very beginning.

"The daily average number of sick was 288·62, a considerably lower figure than last year, which was 336·31.

"*Mortality.*—Seven hundred and twenty deaths occurred during the year, representing a mortality of 16·62 per cent., against 736 deaths and a mortality of 16·77 per cent. last year; 97 deaths occurred within 48 hours of admission.

"The following diseases caused the largest number of deaths:—

	1903		1902	
	No. of Deaths	Per-centage	No. of Deaths	Per-centage
Beri-beri	192	21·30	158	18·84
Dysentery	109	44·85	129	51·08
Phthisis	100	66·22	103	66·02
Diarrhœa	77	48·42	142	46·25
Cirrhosis of Liver	32	60·37	21	63·62

"*Special Diseases: Beri-beri.*—The admissions from this disease exceed those of last year by 40, and the death-rate is also slightly higher.

"The following table shows the admissions and death-rate for the last five years:—

Year.	Admissions.	Death-rate.
1899	720 ...	21·11 per cent.
1900	836 ...	20·91 ,,
1901	599 ...	21·55 ,,
1902	761 ...	18·84 ,,
1903	801 ...	21·30 ,,

"Forty-three patients were transferred to Jeram during the year.

"*Dysentery.*—The return shows 243 cases treated, 109 deaths and a death-rate of 44·85 per cent. Three of the deaths were complicated with abscess of liver, in two of which there were multiple abscesses. In all three amœbæ were demonstrated.

"*Diarrhœa.*—One hundred and fifty-nine cases were treated with 77 deaths and a death-rate of 48·42 per cent. The number of cases treated is considerably less than last year, when 307 cases were treated.

"*Malarial Fever.*—Two hundred and fifty-three cases were treated; this is an excess of 74 over last year. The types were:—

	1903.	1902.
Malignant	136 ...	81
Benign quartan	79 ...	55
Benign tertian	26 ...	43
Mixed types	12 ...	—
Total ...	253 ...	179

"The mixed types were:—

Malignant and benign tertian	6
Malignant and benign quartan	1
Benign tertian and quartan	5
Total ...	12

"Sixteen deaths were directly attributed to this disease, giving a death-rate of 6·32 per cent. All the deaths were from the malignant type. The districts from which most of the cases came were Kuala Lumpur (chiefly Batu Road and Java Street) 55, Gombak 45, Ampang 28, Kepong 12, Panthai 10.

"*Phthisis.*—The return shows 151 cases treated, with 100 deaths, but this disease complicated five other diseases, and was their immediate cause of death. The percentage of deaths, therefore, is 67·3. Several of the cases involved the bowel as well as the lungs.

"*Enteric Fever.*—Ten cases were treated, with eight deaths. Two of the patients died within 48 hours. Most of the cases proved fatal from perforation and peritonitis. One case was convalescent, when he ate some guavas and got a relapse with perforation and peritonitis. This is a form of accident which it is extremely difficult to prevent.

"*Plague.*—Two cases were admitted during the year. One was of the bubonic type and was transferred to the infectious ward, where he subsequently died. This case was treated with 5 grs. carbolic acid thrice daily. The other case was admitted with very high temperature and died the next day. No clinical signs were found to account for the high temperature, and the blood examination for malaria was negative. At the autopsy the only morbid appearance found was a number of small pin-point abscesses scattered throughout the spleen. Culture was made from the spleen, and the *Bacillus pestis* demonstrated. This was evidently the septicæmic type; there were no buboes.

"*Post-mortem Examinations.*—Two hundred and eight were performed at the District Hospital and 138 at the Institute for Medical Research by the Director and his staff.

"*Out-door Patients.*—Three thousand and twenty-seven were treated, consisting of 2,329 new cases and 698 repetitions. This is a total increase of 478 and an increase of 558 of new cases as compared with last year.

"*Vagrant Ward.*—Thirty-five cases were treated in this ward, with nine deaths and a death-rate of 25·71 per cent.

"I cannot conclude this report without expressing my thanks to the Director, Institute for Medical Research, and his staff for their valuable assistance in making *post-mortem*, bacteriological and blood examinations, &c."

The Leper Asylum.

Dr. A. J. McClosky, District Surgeon, in charge of this institution, reports as follows:—

"One hundred and twelve lepers were admitted, against 107 last year, and the total treated was 240, against 232 last year.

"Of the admissions, six were Tamils, one Malay and the rest Chinese. Forty-three absconded and 70 died.

"The mortality was 29·16 per cent. Several of the old inmates died during the year.

"The following table shows the comparative figures for the last three years:—

	Admitted.	Total treated.	Absconded.	Died.	Mortality.
1901	95	230	70	34	14·78 per cent.
1902	107	232	49	54	23·27 ,,
1903	112	240	43	70	29·16 ,,

"The increase in the admissions is not a standard to go by in judging of the prevalence of the disease, as several were readmissions of absconded lepers. This year I propose to note the new admissions and re-admissions.

"Discipline was well maintained during the year.

"The swamps to the south and east of the hospital were filled in. Quarters for four gardeners were erected outside the hospital compound."

The Pudoh Gaol.

The infirmary at the Pudoh Gaol was throughout the year under the care of the State Surgeon.

The average number of prisoners in the gaol was 448. I am glad to be able to report that throughout the year the prisoners enjoyed excellent health.

The total number of prisoners treated in the infirmary was 295, with a death-rate of 2·37 per cent., as against 1,169 with a death-rate of 2·56 in the previous year.

I attribute the good health of the prisoners partly to the improvement in the ventilation of the gaol, and partly to the arrangement by which the greater number of the prisoners were employed at extramural work.

Beri-beri.—For the first time for eight years the prisoners have been practically free from beri-beri, Fifteen cases remained under treatment on January 1st, and during that month 22 cases were admitted. Of these 14 were relapses and eight fresh cases: of the eight fresh cases only three had no previous history of beri-beri.

During the rest of the year only nine cases were admitted, and of these only two had no previous history of beri-beri and probably originated in the gaol.

Two prisoners died from beri-beri during the year. The following table gives the number of cases of beri-beri admitted to the infirmary each month during the years 1902 and 1903.

Month.	1902.	1903.	
January ...	68	22	
February ...	44	*nil*	
March ...	63	,,	
April	80	,,	
May	91	,,	
June	83	,,	
July	67	,,	
August ...	75	,,	
September ...	131	1	
October ...	9	2	(one awaiting trial)
November ...	35	5	(four relapses, one awaiting trial)
December ...	55	1	(a very doubtful case).

The want of regular hard labour, such as stone-breaking, was severely felt throughout the year.

The General Hospital, Kuala Lumpur.

This hospital has at different periods during the year been under the care of District Surgeons Dr. Gerrard, Dr. Davies, and recently of Dr. Fletcher, who reports as follows upon the year's work:—

"The number of patients treated during the year 1903 was slightly larger than for the year 1902, the numbers being—

1902 ... 2,170 | 1903 ... 2,244

"The number of deaths was small (106), the percentage of deaths to the total number of patients treated being 4·72 for both sexes taken together, and only 2·99 for men. Twenty-five patients were admitted to the European Ward during the year as against 35 in 1902.

"The old ward was vacated at the end of the year, and the new European hospital has now been opened.

"The number of patients treated in the Female Ward was 339, with 49 deaths. The percentage of deaths in this ward was therefore 14·45, whereas for the rest of the hospital it was only 2·99.

"Most of the patients admitted to this ward are either paupers, estate coolies, or prostitutes, and are generally so ill before they seek admission that little can be done for them.

"Dysentery (including diarrhœa) and phthisis were respcnsible for 19 of the 49 deaths.

"At present one-third of the women in hospital are suffering from phthisis in an advanced stage.

"An extension of this ward is to be built during the current year for women of the better class. This should prove of great service, as there is at present no provision for the hospital treatment of women whose husbands are in the position of junior Government clerks, &c., and do not care for them to go into a ward where a considerale proportion of the patients are prostitutes.

"*Malay States Guides.*—During the year 1903, 235 Malay States Guides were treated in hospital, with no deaths. In 1902, 220 cases were treated, with one death. These figures speak well for the health of the two companies quartered in Kuala Lumpur. The principal diseases for which they were admitted to hospital were malaria (60) and injuries (45).

"*Police.*—The admissions into the Police Ward were 567, with two deaths (from dysentery and diarrhœa). In 1902, there were 587 admissions, with three deaths. The number of admissions is large, but that the diseases from which these patients suffered were generally not of a serious nature is shown by the small death-rate of 0·35 per cent. One hundred and thirty-five of the admissions were for malaria, 44 for constipation and 16 for dyspepsia."

The New European Hospital.

This institution, with nurses' quarters and house for surgeon, was completed during the year. The hospital is an excellent one and is well equipped with every convenience for the comfort of patients. No expense has been spared in furnishing the wards and operating theatre in accordance with the most recent improvements. The hospital is, however, some two miles from the town, and being on a steep hill is difficult of approach. I fear that little use will be made of this institution by the public until it is in charge of a resident surgeon, and until some kind of suitable ambulance is provided by Government to convey patients to it.

The Lunatic Asylum.

The number of lunatics treated in asylum during the year was 180. There were 122 admissions; 75 were discharged cured or to care of friends, and 52 died. The death-rate was 28·88 per cent., as against 21 per cent. in 1902. Of the 52 deaths, 31 were due to dysentery and 10 to beri-beri.

There is no separate infirmary in the asylum for the accommodation of sick lunatics, who have to be treated in a long, low, ill-ventilated room, the ground floor of one of the blocks formerly used as prison cells, the association ward for healthy lunatics being on the upper floor.

As mentioned in my report for 1902, I am of opinion that the present lunatic asylum is in no way suitable for the intelligent treatment of persons of unsound mind. Criminals, cases of idiotcy and maniacs have to be kept together in one room. The wards are low, dark and badly ventilated, and there is no separate accommodation for women or facility for employing or amusing the patients.

Coast Hospitals.

The District Hospitals at Klang, Jugra and Kuala Selangor and the Beri-beri Hospital at Jeram have throughout the year been under the care of District Surgeon Dr. Watson, who reports as follows on the work done at each hospital:—

"*District Hospital, Klang.* — There has been a decrease in the number of patients admitted to hospital, and an increase in those treated as out-patients.

Year	In-door			Out-door	Out and In-door
	Total treated	Deaths	Mortality	Total treated	Percentage of malaria
1901 ..	1822	232	12·73	2789	38·8
1902 ..	1406	153	10·88	2389	20·48
1903 ..	1218	124	10·18	2688	12·11

"The mortality, after deducting deaths of 18 persons dying within 48 hours of admission, was 8·7 per cent. against 7·46 per cent. in 1902, and 8·61 per cent. in 1901.

"*Prevalent Diseases.*—The following table shows the more prevalent diseases:—

Disease.	No. treated.	No. of deaths.	Mortality.
Dysentery and diarrhœa	118	39	33·00 per cent.
Malaria	230	19	8·26 ,,
Pneumonia	35	13	34·28 ,,
Phthisis	17	7	41·17 ,,
Ulcer	193	1	0·05 ,,
Beri-beri	38	3	8·67 ,,

"Bowel complaints as usual head the list of deaths, even although there has been a decrease from 56 in 1902 to 39 in 1903.

"It is extremely satisfactory to note that along with the great decrease in the amount of malaria the number of cases of other diseases treated has only increased very slightly, the population having rapidly increased.

Year	In-door admissions		Out-door total treated	
	Fever	Other diseases	Fever	Other diseases
1901 ..	807	962	965	1824
1902 ..	403	953	364	2025
1903 ..	219	925	245	2443

"In the towns of Klang and Port Swettenham malaria has been reduced to an almost negligible factor, a saving of at least 800 lives having been effected in the last two years.

"*Infectious Diseases.*—Two cases of small-pox were treated, one from a steamer and one on an estate, but in neither instance did any spread of infection occur.

There has been no cholera. Two cases of typhoid fever were admitted towards the end of the year.

"*District Hospital, Jugra.*—The number of patients treated is shown in the following table:—

Year	In-door			Out-door	In-door and Out-door	
	Total Treated	Deaths	Mortality	Total Treated	Number	Percentage o Malaria
1901 ..	434	46	10·46	1204	915	55·8
1902 ..	267	21	7·63	567	279	33·4
1903 ..	209	12	5·82	1066	328	26·09

"The improvement in the health of Jugra begun in 1902 is most encouraging. During 1902 a little draining was done, and this year several most obnoxious pools in the vicinity of the hospital and the District Officer's and boatmen's quarters were drained, while a considerable amount of jungle was cleared away. During the two years quinine has been regularly distributed to school children and coolies.

"The Public Works Department lines at the 17¼ mile have been removed to a more healthy site on the Klanang road.

"To these measures I think we must attribute the improved health of Jugra; and, judging from the ease with which malaria has been dealt with in Klang and Port Swettenham, there is every encouragement to proceed with the work at Jugra.

"*District Hospital, Kuala Selangor.*—The work done during the year is shown in the following table:—

Year	In-door		Out-door
	Total Treated	Mortality	Total Treated
1901	221	3·16	1317
1902	158	8·22	1770
1903	168	4·16	1314

"The large number of out-door patients compared with number of in-door is due to the district being a Malay one. Although the Malays, as shown by the number who attend as out-patients, have faith in European medicines, it is a matter for regret that the conditions within the hospital have not yet been made such as to attract them as in-patients. They are thereby unable to avail themselves of the most valuable part of European treatment.

Business Notices.

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THE

Journal of Tropical Medicine

APRIL 1, 1905.

As having a bearing on the *Schistosomum Cattoi* (Blanchard), a new blood-fluke of man, described by Dr. Catto in a recent number of the Journal, an article by Prof. Katsurada, a translation of which appears in our current number, on a parasite—*S. Japonicum*—found by him in cats in certain provinces of Japan and apparently identical with that found and described by Dr. Catto, may be of interest.

So far back as 1890-93, Yamagiwa and Kurimoto had observed the presence of eggs of an unknown parasite in various organs and tissues of persons from the province of Yamanashi, where a curious endemic disease is known to exist.

In April last year, Prof. Katsurada found ova not unlike those of *S. hæmatobium* in the fæces of persons suffering from this disease. Continuing his investigations he found in the portal vessels of two cats from the province of Yamanashi a new species of trematode to which he gave the name of *S. Japonicum*. On comparing the ova with their contained embryos from the fæces of the living and in the liver and intestinal wall of patients who had died from this disease with those found in the tissues of the cats, he found they were practically identical. Nowhere is it stated in Katsurada's paper that he found adult trematodes in man—only in cats did he succeed in finding them, their occurrence in the former being inferred from the similarity of the ova and their contained embryos, and the pathological lesions found in man with those in cats infected by *S. Japonicum*.

The first actual discovery of a *S. Japonicum* in man was made by Dr. Fujinami; this he found in May, 1904, whilst Katsurada was still engaged in his investigations.

In Dr. Catto's case, on the other hand, the ova in the tissues and sections of the parental forms shown at the meeting of the British Medical Association, in July last, were from the same cadaver.

The description of the worms, male and female, the characters of the ova, their distribution in the various organs, and the lesions they occasion tally very closely with those given by Dr. Catto.

There are, however, just one or two minor points of difference, viz., the remarkable difference in the breadth of the female ·44 as against ·113, the absence of any miracidium in any of the ova in Dr. Catto's case, and the possible difference in the habitat of the parent worms.

Until these points are settled, and until there is positive proof of the identity of the parasites *S. Japonicum* and *S. Cattoi*, described respectively by Prof. Katsurada and Dr. Catto, it might be well to suspend judgment before admitting priority of discovery to the former.

D. T. S. K.

"Lyon Médical," June, 1904.

Actinomycosis de l'Amygdale, Phlegmon Cervical Consecutif (Actinomycosis of the Tonsil).

Poncet, a male, aged 44, had suppuration in the right tonsil, later small superficial abscess at the angle of the jaw. The teeth were in good order. Incision and iodine internally resulted in cure. Three cases are quoted where the tonsil was first affected.

Correspondence.

TUBERCULOSIS AMONGST CIVILISED AFRICANS.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—In an article in the Journal of January 16th, 1905, Major F. Smith, D.S.O., writing upon tuberculosis amongst civilised Africans, says that he makes no attempt to account for the predilection of tubercle for the civilised African.

In 1900-1901 I was attached to the Station Hospital, St. Helena, and the men of the West India Regiment were admitted to the wards along with European troops.

The number of cases of tubercle amongst the admissions was very striking, and one was naturally led to enquire as to a possible cause for it.

I formed the opinion then that one habit at least to which the West Indians were addicted went a long way to explain why tubercle was prevalent.

On going the round of the Hospital in the evening after bedtime, one invariably found that the West Indian soldier slept with the head and face completely enveloped in the bedclothes.

The windows of the ward were always carefully shut by these men, in spite of orders to the contrary, as soon as they thought it would not be observed. An open window or any amount of cubic space would, however, be of small benefit to a man whose head is buried under a blanket and quilt.

I made it a point to visit their barracks after "lights out," and found that, with very few exceptions, the same habit prevailed there.

These black troops are composed of young men at the most susceptible age for infection, and a habit such as I have described persisted in for a number of years is quite sufficient in the light of present knowledge to account for the predilection of tubercle for the civilised West African. The wonder is that the percentage of infection is not greater.

A course of simple instruction on the causes, &c., of tuberculosis might do good.

To eradicate, however, this pernicious practice of sleeping in the fashion described, strict supervision and the punishment of offenders will be necessary.

I have no doubt that were this habit stamped out, a large reduction in the admissions for tubercle would result.

W. J. ARNOLD,
Colonial Surgeon.

St. Helena,
March 10th, 1905.

THE THOMPSON YATES AND JOHNSTON LABORATORIES REPORT.

(*Continued from page* 93.)

VII.—SUPPLEMENTARY NOTES ON THE TSETSE-FLIES.[1]

(GENUS GLOSSINA, WEIDEMANN.)

By ERNEST E. AUSTEN.

THE following are the known species of tsetse-flies.

They are: (1) *Glossina tachinoides* (Westwood). (2) *G. palpalis* (Robineau-Desvoidy). (3) *G. pallicera* (Bigot). (4) *G. pallidipes* (Austen). (5) *G. longipalpis* (Wied.). (6) *G. morsitans* (Westwood). (7) *G. longipennis* (Corti), and *G. fusca* (Walk.).

Since the monograph appeared, Dr. Emile Brumpt described another species under the name of *G. Decorsei*, from specimens obtained by Dr. Decorse in the River Shari and on the shores of Lake Chad.

The new species, however, has proved to be none other than *G. Tachinoides* (Westwood), already described in 1850.

[1] Published in the *British Medical Journal*, September 17th, 1904, and summarised in the JOURNAL OF TROPICAL MEDICINE, August 15th, 1904.

VIII.—A NEW HÆMOGREGARINE IN AN AFRICAN TOAD.

By J. W. W. STEPHENS, M.D.Cantab., D.P.H.,

Walter Myers Lecturer in Tropical Medicine, University of Liverpool.

ABSTRACT.

Out of a batch of toads received from Sierra Leone, in October, 1903, five were examined by me. Four out of the five were infected with hæmogregarines. In one toad they were with difficulty found, in the others the hæmogregarines were fairly plentiful. At a first examination it struck me that the forms present differed from any of those described as occurring in reptiles or amphibians.

It may be well first to describe the classification used by Minchin.

ORDER HÆMOSPORIDIA (Danilewsky).

Sub-Order I. HÆMOSPOREA.

Genus I. *Lankesterella* (Labbé, 1899) for *Drepanidium* (Lankester). The hæmogregarine is not more than three-quarters the length of the blood corpuscle it inhabits.

Type.—*K. ranarum*, or more correctly *L. minima* (Chaussat).

Genus II. *Karyolysus* (Labbé, 1894). The hæmogregarine does not exceed the corpuscle in length.

Type.—*K. lacertarum* (Danil), from lizards.

Genus III. *Hæmogregarina* (Danilewsky, 1897) (syn. *Danilewsky*, Labbé, 1895). The body of the parasite when adult exceeds the corpuscle in length, and is bent on itself within it, in a characteristic manner like the letter U.

H. lacazei in lizards is the commonest.

H. magna is the only hæmogregarine in the strict sense so far described in amphibians, and it is possible that this is the macrogamete of *Lankesterella, sp.*

The parasite, as seen in stained specimens, presented itself under two forms.

(1) The first form consists of a parasite only slightly longer than the red cell, its pointed end being bent into a slight crook. In this form there is not observed the great enlargement and decolouration of the red cell seen in the case of the second form. With Romanowsky the nucleus stains typically, reddish-rose colour, and the protoplasm shows a number of coarse reddish granules mainly collected at the pointed end. In its staining the nucleus differs from that of the other form, which very rarely is stained red but only blue. The nucleus of the cell is displaced, but not nearly to the same extent as in the second form. Younger forms than this I have not observed.

(2) The second form consists of a typically folded vermicule. They vary somewhat in size, and in the

larger forms several peculiarities of structures are noticeable.

The parasite itself has a well-developed nucleus situated in the thicker half of the parasite in the stained specimen. The nucleus commonly has a rhomboidal or elongated triangular shape. It stains blue with Romanowsky and very rarely red. Not uncommonly at the tip of the "tail" end of the parasite there is a blue-stained spot. The large U-shaped forms are surrounded by a well-defined cyst which separates the parasite from the cyst wall. This cyst frequently shows some peculiarities of structure; at the end corresponding to the bend of the hæmorgregarine there is an area staining a deep dull red. This area is concave on the side facing the parasite, so that it appears to fit over the parasite as a cap. It is not, however, actually attached to the parasite, for sometimes a clear line can be seen separating this reddish area from the parasite. The larger forms of the U-shaped parasite invariably show this stained (capsular) area, but it is not developed in the smaller forms, when also the cyst is not clearly defined. A certain amount of staining reaction (red) also is seen in other portions of the cyst. It is, however, in these encysted forms of the parasite, when found entirely free from red cells, that the cyst contents surrounding the parasite show a more diffuse staining. In these the conical area at one end is often lost and instead the cyst shows a general mottling with rather coarse granules.

IX.—TWO CASES OF INTESTINAL MYIASIS.

By J. W. W. Stephens, M.D.Cantab., D.P.H.

The larvæ described in this paper were procured from two young children in Liverpool, in October, 1903. In both cases the larvæ were stated to have been passed *per rectum*.

In the first case the larvæ of two different species were present, viz., those of *Musca corvina* and *Homalomyia canicularis*. In the latter case the larvæ of *Homalomyia canicularis* only.

The larvæ of *Musca corvina* are characterised by:—

(1) The single hook.

(2) The polygonal areas (seen anteriorly).

(3) The lateral respiratory appendages with their eight processes.

(4) The posterior respiratory syphons (two) with their convoluted tracings.

The main characteristics of the larva of *Homalomyia canicularis* are:—

(1) The pitted surface.

(2) The spinous dorsal ventral hairs and the accessory hairs.

(3) The lateral processes of eight segments on the anterior segment.

(4) The posterior stalked syphons.

(5) The anal markings.

X.—NOTE ON THE PATHOLOGY OF TROPICAL "SWELLINGS."

By J. W. W. Stephens, M.D.Cantab., D.P.H.

The patient was sent by Dr. Fletcher, Degama, Southern Nigeria. In his letter dated June, 1903, Dr. Fletcher says: "He has for some months been suffering from cellulitis, or at least peculiar swellings in his hands, arms, feet, and face, *i.e.*, either one or the other; sometimes only one of these is affected at the same time, sometimes two. I know Calabar swellings, but it is not like that; I made several attempts to find a filaria but failed." The patient informed me that he had first noticed the swellings in March, 1903. The swellings he describes as thickenings, hard in character and not pitting. They occurred mainly on the hands, also once below the eyelid. They had occurred on the leg, and then covered an extensive area above and below the left knee, and according to his statement only one swelling occurred at one time at one place.

When the patient was seen by me, a slight swelling on the ulnar side of his wrist (left) about as broad as a crown piece was observed; he stated that the swelling was of the same nature as the others he had suffered from. The swelling was not well marked, it was but slightly raised, somewhat elastic in consistency, and certainly was not hard, nor was there any redness or œdema; his temperature was not raised.

A blood examination was made for parasites with ordinary and thick films. The result was negative. In examining for parasites, however, it was observed that there was a distinct eosinophilia. Careful counts were then made of a number of slides, with the following results:—

Leucocytic count (600 counted):—

Large mononuclear	1
Small mononuclear	23
Polynuclear	26
Esinophil	50

Such a marked relative increase in eosinophile cells suggested a worm infection of one kind or another. No filarial embryos were found in the blood. The fæces were also examined for ova of worms, but the result was negative. The blood from the swelling itself was also examined with negative result.

I have thought it important to place on record the condition of the blood in this case, so that the blood of cases of "Calabar swelling" may be likewise examined. The nature of this case, however, is quite obscure, and I have called it "tropical swellings" for lack of a better name, and because Dr. Fletcher did not consider it to be one of "Calabar swelling."

XI.—NON-FLAGELLATE TYPHOID BACILLI.

By J. W. W. Stephens, M.D.Cantab., D.P.H.

These observations seem to me to prove not only that we have non-flagellate typhoid bacilli, but that the flagella can be restored by "passage" through animals. I think this is of importance in many respects.

(1) It shows that non-motility and the non-flagellate condition may not be characteristic of the bacillus, but may be an acquired character due to laboratory conditions of growth. How far other bacilli can lose their flagella remains to be seen. For instance, a very old strain of *B. pyocyaneus* examined by me was found to be actively motile, and, of course, to possess flagella.

(2) It will be necessary in certain cases, before we can state that a bacillus is non-flagellate, to examine

it as soon as isolated from the body, or to pass it through an animal. Thus in the case of *B. dysenteriæ* and other bacilli and cocci there is a certain conflict of evidence as to the presence or absence of flagella, which may be due to the age of the culture.

(3) If this bacillus "reacted normally" in the agglutination test of typhoid serum, then the presence of flagella cannot be an essential factor in agglutination.

(4) Biologically, the experiment is of interest as showing how profoundly environment can modify structure.

XII.—CLADORCHIS WATSONI (CONYNGHAM). A HUMAN PARASITE FROM AFRICA.[1]

By A. E. Shipley, M.A., F.R.S.

XIII.—THE INTERMEDIARY HOST OF FILARIA CYPSELI (ANNETT, DUTTON, ELLIOTT). THE FILARIA OF THE AFRICAN SWIFT, CYPSELUS AFFINIS.

By J. Everett Dutton, M.B.

The points of interest associated with this filaria are:—

(1) Up to the present it has only been found in one species of bird, *Cypselus affinis*, while other African bird filariæ are generally encountered in many different species.

(2) The habitat of the embryo is essentially the lymph.

(3) The louse, which acts as its intermediate host, as a general rule, belongs to a family, the members of which usually, though not always, are parasitic on one species of bird only.

(4) This louse does not exclusively feed on feathers, but sucks up blood, and probably to a greater extent lymph.

(5) The metamorphosis of the parasites is very similar that of previously known filariæ.

Translation.

SCHISTOSOMUM JAPONICUM, A NEW HUMAN PARASITE WHICH GIVES RISE TO AN ENDEMIC DISEASE IN DIFFERENT PARTS OF JAPAN.

By Professor D. F. Katsurada.

Of the Pathological Institute at Okayama.

(Translated from the "Annotationes Zoological Japonicum," vol. v., part 3, 1904, by Dr. T. S. Kerr.)

For some years there has been observed in certain parts of the provinces of Yamanashi, Hiroshima (both in Central Japan) and Saga (in Kinshu, north-west island), an endemic disease, of which the following are the chief symptoms: Enlargement of the liver and spleen, morbid appetite (occasionally the appetite is diminished), diarrhœa (frequent mucous and blood-stained motions), occasionally also fever, anæmia, cachexia, ascites, œdema, &c. A certain number of the patients die of extreme weakness.

Concerning the nature and cause of this disease up to now nothing certain is known, although Yamagiwa, Kurimoto, Fujinami and others have observed cases in which in several organs (more especially the liver), in cadavers from infected areas, numerous eggs of a hitherto unknown parasite were found.

I had an opportunity in April of this year of studying several cases of this disease in the province of Yamanashi.

In the fæces of 5 out of 12 patients examined I found peculiar ova, similar to those of *S. hæmatobium*. I conjectured that the disease was occasioned by these eggs and the mother beast, and that the latter would in all probability be found in the portal system. But I had at this time no opportunity of sectioning bodies of persons who had suffered from this disease. As I had already found out that trematodes (*e.g.*, *Distomum spathulatum* and *D. Westermani*), of frequent occurrence in man, were also not infrequently found in dogs and cats, I believed that there might be found in these animals a trematode which caused the disease in question. I therefore dissected two dogs and a cat, and in the latter I found part of a male trematode. The description of the aforementioned eggs and the trematode I published in the end of June of this year in Japanese.

Since then I obtained a second cat from the province of Yamanashi, and found in the portal vein and its tributaries numerous trematodes of the same species as that found in the first cat. This information I published on August 13th of this year, and I named the parasite *Schistosomum Japonicum*.

I should like to describe shortly in German the main features of this parasite.

I.—Description of the Eggs.

(1) *Eggs in the Fæces of Patients.*—These for the most part are oval or elliptical, have a thin shell, a double outline, and are of a yellowish or light brownish-yellow colour; there is no operculum. The egg-shell is nowhere provided with a spine like that of the *S. hæmatobium*. The measurements of ten eggs in a fresh state give on an average a median longitudinal diameter ·0835 mm. (·075—·09 mm.) median, transverse diameter ·0625 mm. (·0525—·0725). I also found in the fæces of another patient quite a small egg ·065 in length by ·04 in breadth.

Within the shell is a second very thin membrane which appears as a colourless and faintly refractile envelope, usually known as the yelk membrane, but better styled the shell membrane. Between the shell and the shell membrane is usually a narrow space.

The eggs evacuated with the fæces contained in most cases developed embryos.

The embryo has a longish oval body tapering from before backwards, and at its anterior end is a kind of proboscis. The cuticle is provided with cilia, which in the anterior body parts are characterised by their size and lively vibration.

Most noticeable in the internal anatomy of the embryo at its anterior end and in the middle of the body is a mass of yellowish, strongly refractile

[1] This article was published in the *British Medical Journal* of September 17th, 1904, and summarised in the Journal of Tropical Medicine, August 15th, 1904.

granules, which are perhaps comparable with the contents of the so-called stomach sacs of *S. hæmatobium*. In the centre of the body and at its posterior extremity are to be found several small granular cells, and also numerous highly refractile spheres whose structure is not recognisable. The size and distribution of the spheres is very irregular. The two large glands which in *S. hæmatobium* are found next to the intestines, I am not sure about.

About this part within the shell membrane is usually found a clear semi-fluid substance.

In the fæces comparatively few eggs containing only a granular mass are to be found.

The nature of the eggs is very like that of *S. hæmatobium*, and leads to the conjecture that the parasite must belong to the same genus.

(2) *Eggs in the Tissue of Men and Cats.*—These I observed in three human livers and one human intestinal wall. To Drs. Shimodaira and Muramatsu, who very kindly gave me the material, my best thanks are due.

The typical form (oval or elliptical) is still retained by a certain number of the eggs in the human tissues. Inside the thin egg-shell is a granular mass, or a miracidium provided with cilia; the measurements of twenty-five eggs from a human liver gave on an average, length ·072 mm., breadth ·9 m.m. The description of the eggs already shows that they are of the same kind as those found in the fæces of patients from Yamanashi province. But the eggs in the tissues are somewhat smaller than those in the fæces; this can be readily understood, for the eggs in the tissues are more or less influenced by their surrounding conservative media.

Besides the typical eggs a proportion of more or less divergent forms are found in the tissues, namely, broken egg-shells, into which leucocytes have migrated, and long spindle-shaped transformed eggs with calcareous contents, calcareous matter being also found in eggs which retain their characteristic form. Moreover, I observed eggs in the two cats.

Cat I., in which I found the first specimen of a male of one parasite, had lived for over eleven years in the village of Okamada (a well-known endemic area) in the province of Yamanashi. The liver of this cat, macroscopically, was distinctly altered, and in it were found numerous eggs, amongst which were relatively rare those of characteristic shape and containing typical embryos. Broken portions of egg-shell were found here and there, and even when the egg-shell retained its shape it frequently contained many small cells and even foreign body giant cells, but no embryo. At times, in consequence of the calcareous matter, the structure of the contents can no longer be recognised. The average measurements correspond with those of the ten eggs, and they are fairly regular in shape; length ·07 mm., breadth ·047 m.m.

Cat II., like *Cat* I., had lived for over two years in the village of Okamada. In the portal and mesenteric veins of this cat I found large numbers of a species of parasite which I called *S. Japonicum* Microscopically I recognised its eggs in the liver, the bowel wall, as well as in the large intestine. Amongst these were many comparatively fresh eggs, in which the egg cells and vitelline cells could be recognised unchanged. There were also embryo containing ova, but comparatively few. The average measurements of thirty eggs from the liver were length ·064 mm., breadth ·047 mm.; the average measurement of ten eggs from the large intestine which contained developing embryos being ·067 mm., breadth ·05 mm. It is apparent that the size of the egg varies with its stage of development.

(3) *Eggs in the Uterus of the Mother Beast.*—The same description is in the main applicable to these as to the ova in the fæces of patients and in the tissues of men and cats, but in them are found no embryos, only egg cells and vitelline cells. In the relatively narrow uterus in which the eggs are crowded together they assume various shapes; seven eggs can be seen in a transverse section of the uterus. The measurement *in utero* of ten eggs regularly formed was, length ·0584 mm., breadth ·0425 mm. It is also in the uterus that the smallest ova already described are to be seen.

II.—Description of the Worms.

The sexes of the parasite are distinct, and their bodies are very dissimilar. The body as a rule is small and slender, varying, however, in the same sex; for the most part it is of a dirty white colour. Nearly the whole posterior half of the female is darker, usually almost black, and in this portion the vitellogene gland is greatly developed, the gut being filled up with a quantity of blood-coloured material.

(1) *The Male.*—In spite of the large number examined I was only able to obtain measurements in eight, as many were more or less destroyed in handling. The results of these measurements were as follows:—

No.	Body length (mm.).
1	12
2	11
3	10
4	12
5	10
6	10
7	7
8	11·5
Average	10·43

Despite these measurements I do not accept them as the standard of the parasite, as all of them were found in small hosts (cats). Parasites found in man in whom they had lived a long time might perhaps become much larger.

The body is for the most part flat, but in its posterior section is a canal produced by infolding of the sides (gynæcophoric canal) which serves for the reception of the female. The mouth and posterior sucker lie close to each other in the anterior part of the body; the mouth sucker is funnel-shaped; the posterior sucker is a little bigger than the anterior sucker, and is armed. In a male 12 mm. long, measurements show the diameter of the anterior sucker to be ·29 mm., the posterior sucker ·33 mm. There are also males which possess somewhat larger suckers. The anterior body in the male measured ·8 mm. from the posterior lip of the posterior sucker

to the anterior extremity; the breadth in the centre of the anterior portion was ·35 mm. The greatest thickness, usually a little behind the centre of the body, is ·53 mm. It is to be noted that the thickness of the body is very variable, according to the greater or lesser infolding of the sides of the body. On section of a well-developed male, ·48 mm. at its thickest part, I found that the breadth of a female which was lying in the gynæcophoric canal measured at the point of section ·37 mm. The posterior end is tapered. The suckers are beset with very fine spines, and the cuticle in the gynæcophoric canal has similar spines, but not so closely set. On the back there are neither spines nor tubercles as in *S. hæmatobium*.

Next is to be seen a single œsophagus usually surrounded by numerous glands; behind this commences the alimentary tract with a dilatation ·29 mm. in diameter, which then divides into two cæca. The bifurcation of the cæca is just in front of the posterior sucker, and they again unite sooner or later into a central trunk. The point of juncture varies more or less: it is to be noted, however, that the junction of the cæca in our parasite is rather further back than in *S. hæmatobium*, although very similar to it. In a male a little over 10 mm. in length, the junction of the cæca is only for a short distance, somewhere about 1·6 mm.; the point of junction is in the posterior sixth of the body. It is also to be noted that the cæca unite now and again for a short distance. The cæca have a sinuous and zig-zag course. The excretory pore is at the posterior end, and lies somewhat dorsally. The contents of the cæca, everywhere more or less abundant, are chiefly polynuclear leucocytes mixed with a few coloured granules.

Between the cæca in front of the posterior part of the body lie at most six testicles, closely packed together, which lead into an excretory duct. The sexual apparatus lies immediately behind the posterior sucker at the entrance to the gynæcophoric canal.

(2) The female is cylindrical, tapering from before backwards; the greatest diameter is just behind the middle of the body. The cuticle is smooth, only in the suckers are spines to be found. Of those seen only a few were intact; the length is from 8 to 12 mm. It is to be noted that still larger females will occasionally be found, chiefly in man.

The suckers are close together; the anterior sucker in a female 11·5 mm. long was ·063 mm., and is a little smaller than the posterior sucker, which in the same female was ·074 mm. Measurements of this female were, of the anterior body ·29 mm. long, breadth in the middle ·068 mm., behind the posterior sucker ·088. The greatest thickness of the female is ·4 mm.

The œsophagus lies in the anterior part of the body just as in the male; the bifurcation of the cæca is immediately in front of the posterior sucker. Behind the ovary both limbs unite, the single trunk running in the middle line to the tail end, where it ends in a *cul de sac*. The intestine throughout its course is more or less zig-zag, occasionally spiral. The contents of the cæca are usually considerable, consisting chiefly of yellow-brown pigment cells and a few leucocytes; these pigment cells are found not only in the single portion, but in both cæca. It is to be noted that the single portion of the cæca of the female is considerably thicker than that of the female *S. hæmatobium*. According to my measurements the transverse diameter in a well-developed female was ·234 mm., whilst according to Leuckart the single duct of the Egyptian species measured only 0·4 mm. Cross section of the single cæca of a male sectioned with the aforesaid female showed it to be a longish oval, its greatest diameter being ·055 mm.

The excretory apparatus is well developed and similar to that in *S. hæmatobium*.

The ovary lies in the centre of the body, and is of a longish oval shape. In the female 11·5 mm. long, already alluded to, my measurements showed it to be ·59 mm., in another female 8 mm. long it measured ·39 mm. The oviduct springs from the hinder end, winds round to the front, and joins in with the vitello duct in front of the ovary; here the shell gland opens. The common canal widens out up to the ootyp, and becomes then the uterus in its central part up to the genital pore, which lies immediately behind the posterior sucker. The vitellogene glands lie behind the ovary, and reach quite to the posterior extremity; the vitello duct runs almost medially alongside the single cæca.

That the vitellogene gland does not occupy quite the half of the whole body, and that the uterus for this reason occupies rather more than the anterior half is, compared with *S. hæmatobium*, an important difference. In the main our parasite is very like *S. hæmatobium*, though certainly a different species.

III.—Pathology.

The parent worms in men and cats are usually found in the portal vessels and their tributaries, as well as in the mesenteric veins.

The food of the worms must naturally be the blood of their hosts; removal from the blood demonstrates the presence of numerous blood-stained parasites. It may also be that the blood corpuscles of the host, owing to the presence of the worms, are destroyed more or less mechanically. The worms, in all probability, by a process of assimilation produce some toxic materials which perhaps cause enlargement of the spleen.

The eggs give rise to embolism in several of the organs, most frequently the liver, in which they excite inflammation and widespread thickening of the tissues. In consequence of this the liver sooner or later shrinks, and a kind of cirrhosis results, whereby the capsule of the liver becomes granular, thickened, and irregular.

The foregoing appearances in the liver are the phenomena produced more or less by stasis. Moreover, in most cases eggs are found in the intestinal mucosa and sub-mucosa, especially in the large intestine. The deposition of the eggs induces more or less severe inflammation, which leads in parts to tissue disturbance, in parts to tissue growth; infiltration in the bowel wall follows, and that frequently terminates in ulceration of the mucous membrane.

As the eggs of the parasite readily alter their form according to their environment, and are consequently able to pass through relatively small spaces, they will be carried by the blood stream throughout the body, and deposited in small numbers in all the organs.

I may here cite Yamagiwa's case, in which owing to the deposition of these eggs in the cortex of a man from the province of Awomori, the so-called Jacksonian epilepsy was induced. At the time Yamagiwa thought the parental form to be *D. Westermani;* he now admits this was not the case.

It is to be noted that hitherto no bladder lesions have been observed in our parasite, which is nearly always the case in *S. hæmatobium.*

The manner of infection is not yet certain; probably it is through drinking worm-infected water. Whether through bathing in dirty water the infection could obtain entrance through the skin remains a question. It is at all events worthy of notice that floods, as in Egypt, are frequent in the regions regarded as infected. Caution should, moreover, be used in the use of raw vegetables, molluscs, and fish.

In conclusion, it is my pleasing duty to convey to Professor Dr. I. Ijima my sincere thanks for his valuable advice in the publication of this work. To Professors Suga, Mikami, Kubo, and Shenda for their kind assistance I am much indebted.

Okayama, October, 1904.

POSTSCRIPT.

Since the preparation of these pages, Fujinami, in the *Kyoto-Igahu-Zasshi* (vol. i., pamphlet 3, end of October, 1904), states that he has found a female *S. japonicum* in the human body.

It is unfortunate that this female was in parts damaged; still, this valuable find opportunely confirms my discovery.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Bulletin Général de Thérapeutique" December 30, 1904.

Treatment of Beri-beri. By Ulysse Paranhas.

Continuous electric currents are recommended by means of the negative pole in a foot-bath and the positive on the spine, or local application to the nerves of a 10-20 milliampère current to the nerves for fifteen minutes daily. Faradism is of use when the muscles are weakened, giving 100-200 interruptions a minute.

Tepid douches with the patient reclining; if reaction follows, a warm foot-bath, given before or after the douche, relieves. Massage gives great relief.

Internally organic arsenic, as arrhenal 1 gm., water 20 cc., ten drops in half a tumbler of milk at bedtime.

The author is favourably impressed by marapuamah (*Livicosma ovata* of the order *Olacacea*) in ounce doses daily—that is, half an ounce twice a day after meals. The drug has the advantages of strychnine without its disadvantages. As a general toxic the glycerophosphates are recommended, 4 grammes of the soda salt in 200 cc. of water; of this 2 cc. are hypodermically injected daily.

For dropsical cases theobromine 2 grammes daily in our doses in cachets, to which may be added 0·25 doses of phosphate of soda. Purgatives, elaterium (English) gramme 0·5, extract of rhubarb 60 grammes, to make six pills, one every half hour, and German brandy, *i.e.*, tr. jalap Co. codeia, flavoured with syrup of prunes.

For pulmonary œdema, caffeine, dry cupping, and inhalation of oxygen, and calomel for congestion of the liver.

T. B. P.

"Journal of the American Medical Association," January 21, 1905.

Dengue in the Isthmian Canal Zone, including the Report of the Laboratory Findings. By D. Carpenter and R. L. Sutton.

During the spring and summer of 1904 Drs. Carpenter and Sutton undertook a prolonged and careful enquiry into the pathology of dengue. They examined the blood, but were unable to confirm the presence of the micrococcus described by McLaughlin, of Texas, in the *New Orleans Medical and Surgical Journal* of 1885 and the *Texas Medical News*, 1895-6. No micro-organisms of any kind were found in the blood of patients suffering from dengue.

In experimenting upon the conveyance of dengue by mosquitoes, the following species were utilised: *Culex consobrinus* (Desv.); *C. stimulans* (Walk.); *C. tarsalis* (Coq.); *C. tæniorhynchus;* the *Conchyliastes posticus* (Wied.); and the *Stegomyia fasciata.* Neither in the stomach nor salivary glands of any of these mosquitoes were any bacteria, piroplasma, or zygote forms found.

Inoculation experiments were unsatisfactory, as other methods of infection were not excluded.

Scheube ("Diseases of Warm Climates") and Clayton ("Encyclopædia Medica") have described a moist climate and a high temperature as predisposing factors in dengue, combined with overcrowding and insanitary conditions generally. There is a marked resemblance at times between cases of influenza and dengue. Swabs from the throat showed leptothrices and streptothrices in numbers, and a small diplococcus free or in epithelial cells. The same diplococcus was also found in pus from a "tropical" bubo. The result of the observations tended to show that:—

(1) In dengue a leucopænia is present from the first.

(2) Blood examination serves to exclude malaria as a cause of dengue.

(3) Albuminuria is rare; the opposite obtains in yellow fever.

(4) It is suggested that the causative agent is a small diplococcus or a delicate bipolar staining bacillus closely resembling Pfeiffer's organism.

(5) Infection is probably by way of the respiratory tract.

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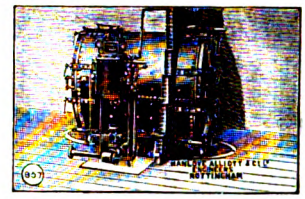
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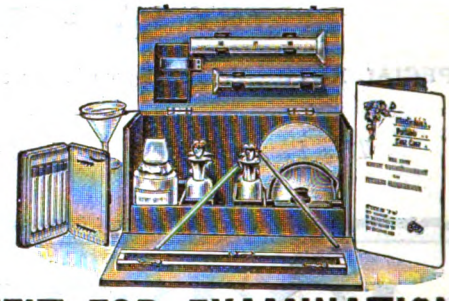


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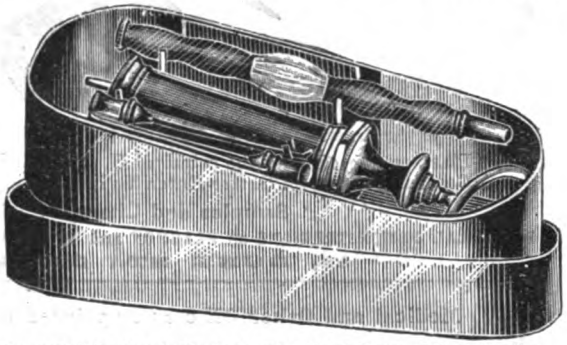
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Original Communications.

AN UNDESCRIBED FORM OF ULCERATION OF THE LARGE INTESTINE, PROBABLY OF AMŒBIC ORIGIN, CAUSING IN SOME CASES ABSCESS OF THE LIVER.

By T. C. Mugliston, M.R.C.S., L.R.C.P., and L.M.,
Colonial Surgeon, Penang;
AND
G. D. Freer, M.B.Lond., M.R.C.S., L.R.C.P., D.P.H.,
Colonial Surgeon Resident, Penang.

We present this paper to you as we think the condition of the large gut described by us has not been hitherto recorded, nor the influence of it on the formation of liver abscess previously recognised.

At the Annual Meeting of the British Medical Association in Manchester, in 1902, there was a discussion in the Tropical Section on the causation of liver abscess, and particularly on the part played by dysentery in causing that condition.

By some it was held that liver abscess was always due to dysentery, while others thought that in many cases there was no history of dytentery. As somewhat of an explanation of the latter view we venture to bring the following cases to your notice, and suggest that the conditions found by us *post mortem* have not been hitherto described.

They cannot be confused in any way with ordinary dysentery as seen clinically, on the *post-mortem* table, or as described in books.

Dysentery is described as a fever, accompanied by frequent stools of blood and slime; the stools having a distinctively putrid smell. With these conditions there is great pain in the abdomen, tenesmus, and often complete prostration. *Post mortem* the large intestine exhibits an engorged, inflamed and often sloughing appearance.

In the condition we describe there may be little or no fever in uncomplicated cases. The patient usually states that he has felt unwell for a week or more, that he has undefined pains in the abdomen, and that his motions are more frequent than usual. The temperature is usually found to be about 99° in the morning and 99·5° at night; in some cases normal all day. The motions may be as frequent as one every hour in the day, and every two hours during the night. The stools are not offensive, but are full of jelly-looking slime, with only a few streaks of blood. On abdominal examination some tenderness is found over the ascending and transverse colon.

The patient, if wise enough to stay in bed and adhere strictly to milk diet, usually reverts to healthy motions in three weeks, the stools improving in character after the first ten days.

Situation of Abscess.

If, on the contrary, the patient refuses to be guided as above, or thinks he is not sufficiently ill to seriously seek advice, he is finally attacked by rigors, accompanied by a rapid rise of temperature to 104° or 105°. Severe pain, increasing day by day, is felt over the region of the liver, and other symptoms of liver abscess supervene. At this stage, although an abscess may be present, which it usually is on the under-surface of the right lobe, it may be very difficult to find, and, if found, to satisfactorily treat. We have seen the liver pierced in all directions, and an abscess in the liver at a point opposite the beginning of the transverse colon escape puncture.

We believe that cases such as these are of more frequent occurrence than is supposed, and that the milder or more lucky ones may even be of the ambulatory type throughout, and so escape notice.

It is, of course, impossible to say whether the milder cases have the same pathological condition underlying them as in the two cases described below, but, as there is nothing at the onset to distinguish them clinically, the importance of early treatment in all will be sufficiently obvious.

It is to be noted that all our noticed cases have so far been in Europeans, but of a large number of *post-mortem* examinations made in dysentery and diarrhœa cases in natives—chiefly Tamils and Chinese—we have not yet found the characteristic circular ulcers of the large intestine hereafter described.

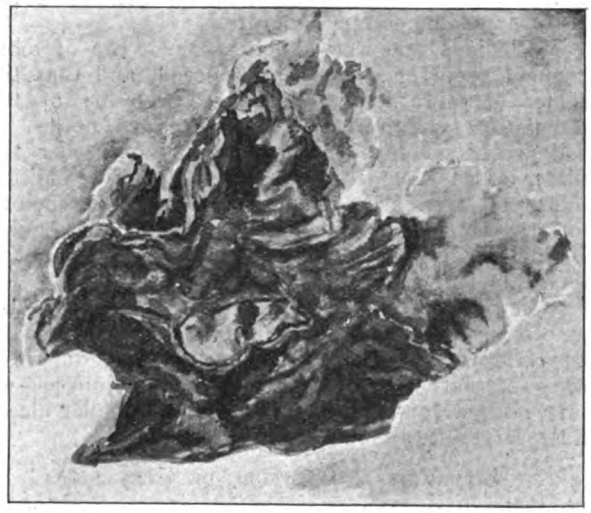
Situation and Nature of Ulcers.

In the two following cases, which we have happened to have seen together, the dysenteric condition was associated with liver abscess, and towards the end with uncontrollable hæmorrhage from the bowel. Both proved fatal, and at the *post-mortem* examination, instead of the ragged, irregular ulceration affecting a considerable portion of the large intestine one would have expected, there were present in the cæcum and adjacent part of the ascending colon a few symmetrical ulcers, round or oval in shape, with raised rounded edges somewhat undermined. If they had been present in the small intestine, one would at first have put them down as typhoid ulcers. Both patients were Irishmen and prominent Government officials. Although the description of the first case is from recollection only, it made so great an impression on our minds that several times during our attendance on the second patient we were reminded of it by the symptoms, and expressed the hope that that would not prove to be similar.

Case 1.—The first case occurred in Singapore some years ago. The patient had had what seemed to be merely a very mild attack of dysentery for two or three weeks before admission to hospital, and most of this time was going about his ordinary work. Signs of a liver abscess then developed, and for this he was operated upon a few days after admission. Instead of improving his condition became worse, the temperature kept up, the dysenteric symptoms more troublesome, large quantities of blood being passed *per rectum*, and he died a week or ten days after the operation. It was thought it might be a case of multiple abscess of the liver, but at the *post-mortem* examination only a single abscess was found, and in the large intestine the characteristic symmetrical ulcers just mentioned.

Case 2.—The second case occurred in Penang recently. He first sought medical advice on August 9th, 1904. He said he had not been feeling fit for some

time and lately had noticed a little blood and slime in his motion. He thought he must have eaten something which had disagreed, and wanted a "good clear out." He was given a dose of castor oil and chlorodyne, and a few days afterwards said he was



Ulceration of Large Intestine.

all right, but constipated. Drachm doses of sulphate of soda with dilute sulphuric acid and peppermint water were then prescribed. On August 24th fever began, and afterwards (*vide* chart) assumed an irregular remittent type, accompanied at first by rigors every eight hours. A microscopical examination of the blood showed what appeared to be ring-form parasites in the red cells; but quinine, both by mouth and hypodermically, had little effect on the temperature. Retching and vomiting were at this time troublesome symptoms. Constipation was still complained of, and on August 26th, after a consultation, he was ordered a grain of calomel every two hours until the bowels acted. At this time no enlargement of the liver could be made out, the upper limit being lower than normal, only extending as high as the upper border of the seventh rib near the sternum; but there was a suspicion of a friction sound at the right base.

On August 27th the bowels were open several times, the motions containing a little loose fæcal matter, with a good deal of jelly-like mucus and a few streaks of blood.

On August 28th he came into hospital, and was put on a mixture containing quinine and sulphate of magnesia. The same afternoon he passed a semi-consistent bile-stained motion, containing no blood or mucus, and later on several watery motions. Urine high coloured, acid, sp. g. 1030, no bile, albumin, or sugar.

August 29th.—Passed several watery pea-soupy motions. Magnesia sulphate mixture stopped, and put on the chlorine mixture of Burney Yeo. Widal's test for typhoid gave a negative result.

About 11 p.m. had sudden severe pains in right shoulder, right side of chest, epigastrium and right iliac fossa. Said the pains were the worst he had ever felt in his life, and he was afraid to breathe.

August 30th.—Slight friction sounds audible external to right nipple, and over the base of the right lung. At 11 p.m. similar pains to the previous night but less severe, the pain most marked in epigastrium and right iliac fossa.

August 31st.—Had a good night after hypodermic injection of morphia; could expand his chest now with less pain. Remarked that when his temperature falls the pain almost ceases, and reappears when it rises.

September 1st.—In the morning passed two copious motions, chiefly blood-clots with a little semi-consistent fæcal matter. Microscopical examination showed only blood corpuscles, no pus cells. Given pil. plumbi c. opio grs. iij.

September 2nd.—Liver dulness increased upwards to upper border of the sixth rib. At 7 p.m. severe pain in right lumbar and right iliac regions, relieved by application of hot-water bottle. Bowels not acted since previous day.

September 4th.—Severe pain all over liver when moved. Liver dulness lower in epigastric region than previously. Bowels open three times, semi-consistent bile-stained motion.

After consultation, chloroform was administered, and the liver explored in several directions with a full-sized aspirating needle; 7 or 8 ozs. blood drawn off, but no pus found. There was no vomiting afterwards, and he expressed himself as feeling much easier and free from pain.

September 5th.—Icteric tinge noticed about sclerotics. Passed three semi-consistent bile stained motions.

September 6th.—Passed in night two formed milk motions with a little blood. About 11 a.m. he was noticed to be looking very pallid; extremities cold; said he felt faint. At 1.40 p.m. he began to pass large quantities of dark blood and clots *per rectum*. Ice-packs to the abdomen, starch and opium enemata, suprarenal extract, and subcutaneous injections of saline solution were all used, but the hæmorrhage



Ulceration of Large Intestine.

from the bowel continued, and he died the same evening.

A partial *post-mortem* examination was held on the following day. On opening the abdomen and chest cavity there appeared to be at first sight very little abnormal, and no signs of peritonitis; but on pulling

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Professor of Hygiene, King's College, London; Lecturer on Tropical Hygiene, London School of Tropical Medicine; formerly Health Officer, Calcutta; Medical Adviser to the Government of Cape Colony, during the Outbreak of Plague in 1901; Commissioner for the Colonial Office to Inquire into the Causes of the Continuance of Plague in Hongkong



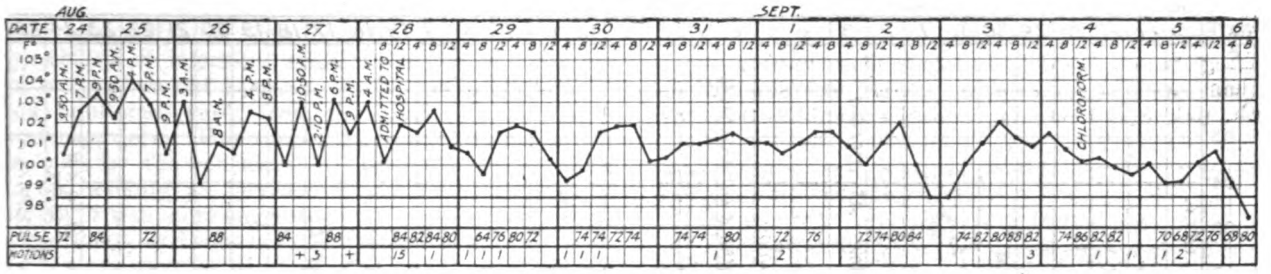
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[P. T. O.

EXTRACT FROM THE PREFACE.

THIS volume has been written at the request of the Syndics of the Cambridge University Press with the object of bringing within a moderate compass the principal facts concerning plague, from its historical, epidemiological, clinical, therapeutic and preventive aspects. Eleven years ago, plague as an epidemic disease was merely of historical interest. Confined to some remote places in China, in India, in Persia, in Arabia, and in Africa, its power was generally believed to be extinct. To-day plague is a matter of concern to many countries and has been the subject of two International Conferences...In 1903 the number of deaths from plague in India was 853,000, and in 1904 it was over a million, being 1,040,429. Of the million deaths in 1904, over 350,000 occurred in one Province. The Punjaub is not a large Province; it has a population of under 27 millions[1], or less than that of England, and yet it lost in the course of 12 weeks in 1904 over a quarter of a million of its inhabitants. If in the Province of Manchuria either the Russian or Japanese army now opposed to one another were by some misfortune completely destroyed, the catastrophe would not be greater than what happened to the inhabitants of the Punjaub from plague, and if both armies were destroyed it would not compare with the destruction of human life from this disease in India in 1904. These are the official figures, and are admitted to be below the mark on account of concealment on the part of the inhabitants. The total number of deaths in India officially recorded from plague since 1896 was, up to the end of December 1904, three millions one hundred and fifty thousand.

[1] Census of India 1901 gives 26,880,217.



TEMPERATURE CHART.

the intestines on one side a large abscess, almost on the point of rupture, was found on the under-surface of the liver posteriorly. On opening the intestines no ulceration was found in the small intestine, but in the cæcum, and just above, in the ascending colon, were five ulcers similar to those in the first case, the largest rather bigger than a 20 cent piece. One of these had almost perforated, and its situation was marked on the outer side of the gut by a reddened and congested patch. Nothing else was found to account for the great hæmorrhage from the bowel during life. There was a little serous fluid in the right pleural cavity.

Microscopical examination of the pus from the liver abscess showed what we thought were amœbæ.

Specimens of the liver were sent to Dr. Low, of the London Tropical School, who very kindly examined them, and reported that amœbæ were present in the necrosed tissue at the edge of the abscess.

The finding of the *Amœba coli* in this case points to the variety of dysentery described belonging to one of the amœbic forms. Possibly the majority of cases of dysentery seen out here belong to the non-amœbic forms, of which bacteria are believed to be the causal agents. This is only thrown out as a suggestion, as no systematic examination of the stools of dysentery cases for amœbæ has been made here. Again, as Manson says, although *Amœba coli* is a very probable cause of one form of dysentery, it has not yet been conclusively proved to be so.

Abscess of the liver, usually single, appears to be a very common complication of so-called amœbic dysentery, and, according to Lafleur, who writes the article in Clifford Allbutt's "System of Medicine," the prognosis in these cases is most unfavourable. "Even when the dysentery is latent, that is, when there are no actual intestinal symptoms, the outlook is not much better; for an exacerbation of the intestinal condition is very apt to occur with the development of the hepatic complication. Surgical intervention is not, as a rule, followed by such satisfactory results as in the case of non-amœbic abscess."

One of us has seen yet another case in a European in which at *post mortem* an ulcer was found adherent to the very thin wall of the abscess cavity.

[NOTE.—The specimens of cæcum and ascending colon from which the illustrations which accompany this paper had been taken had been preserved in formalin, and the appearance of the ulcers is therefore less symmetrical and more shrunken than when fresh.]

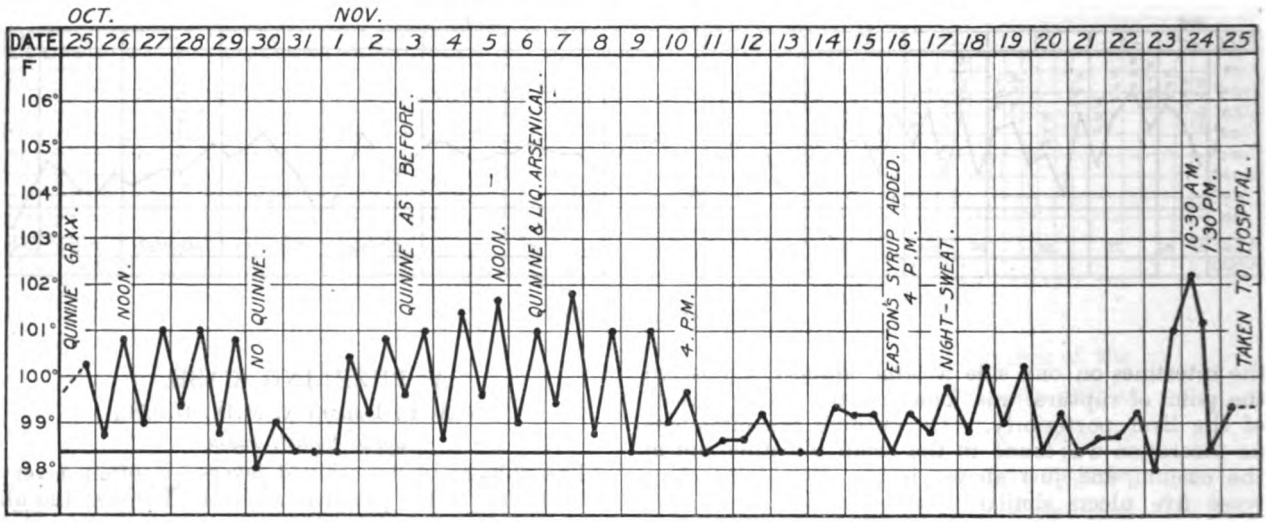
A PUZZLING CASE.

By A. B. DALGETTY, M.D., D.P.H.,
South Sylhet, India.

THE subject of "continued fevers" is often a very difficult one for the practitioner in the Tropics, and all his somewhat limited resources are sometimes called up to enable him to unravel the tangle: the latest discussion on the subject at the last British Medical Association meeting at Oxford did not help to clear up the difficulties very much—chiefly for want of well-ascertained facts and data to build upon. The presence or the absence of enteric fever in any given case is often a difficult thing to decide, in spite of the specific serum test and other tests. The following case will show some of the difficulties connected with the so-called "continued fevers."

H. G., a tea-planter, aged 30, had been in India for seven years; he had occasionally suffered from malarial fever, but not more so than others, and on the whole had kept good health. It may be mentioned here that he was rather subject to abrasions of the knuckles and backs of the hands caused by slight injuries, and these were difficult to heal, tended to fester and to undermine the surrounding skin, and took rather a long time to clear up. This tenderness of the skin, however, is a common condition in the Tropics, especially in the hot season. The upper layers of the skin seem to be very easily abraded, probably owing to the skin being continually sodden with perspiration, and thus becoming readily invaded and undermined by the organisms of suppuration.

At the beginning of September, 1903, the patient had been playing a hard game of tennis, and instead of changing his damp clothes as the usual custom is, had sat down between two doors in the coolest place he could find. Such was the information he gave me when two days afterwards I was called in to see him. He was in bed lying partly on his right side and face, slightly feverish, with a furred tongue, and complaining of severe pains over the lumbo-sacral region, much increased on movement. It looked like a simple lumbago, so I prescribed a purge, hot fomentations and an anodyne liniment. By the end of a week the pains had become easier, and one day he got up and went out for a few hours, but had to return and go to bed again. The condition remained unchanged for the next ten days—slight fever, usually towards evening, lumbar pains, loss of appetite, sleeplessness. At this time he had a sharp attack of diarrhœa, which he attributed to an overdose of Epsom salts given him by the doctor-babu; but this diarrhœa is of some



significance in the light of what followed. A little accident happened about this time, too—he swallowed about a tablespoonful of the lin. belladonnæ in mistake for a sleeping draught which he was taking; but the quantity was not great enough to cause any trouble beyond some irritation of the fauces and a slight alarm

On October 10th he began to have regular attacks of fever, coming on about 6 p.m., and lasting most part of the night, but remitting towards morning. The lumbar pains were much less, so that he could lie on his back; but he now began to complain of sharp stabbing pains under the left ribs in the region of the spleen, sometimes shooting down the thigh; movement of limb aggravated the pain, and a slightly flexed position of the leg was the most comfortable; the pain was always worst, too, at the beginning of the rise of temperature. The spleen could just be felt, but no other swelling nor actual tenderness could be detected by pressure in the iliac region. The abdomen was flat, resonant, and there was no fulness nor gurgling around the cæcum; the heart, liver and other organs were normal. Two blood films taken just before an expected rise of temperature showed in the fresh state numbers of small, actively mobile, hyaline organisms, some free and some within the red blood cells. Stained by Jenner's method the same organism was seen, sometimes double, inside the red cells. So far it was clear that he was suffering from malarial fever, with the æstivo-autumnal hæmamœba present. For some time he had been taking quinine amounting to as high as 25 grs. of the sulphate in twenty-four hours, yet the living hæmamœbæ could still be found, as proved on this occasion and on many subsequent occasions.

Since he was making no progress and resided at some distance I had him removed to my bungalow on October 24th. Next morning I gave an intramuscular injection of 20 grs. of quinin. acid. hydrochlor, and later 10 grs. by the mouth; but the temperature rose in the afternoon as usual. From this date onwards the temperature chart will show the course of the fever. During the next fortnight the temperature ran up to 101° F., or a little over, at noon, and fell to about 99° F. towards morning, only once having touched the normal line. This short interval of apyrexia coincided with a period of two days when the daily dose of quinine had been withheld, but on the following day the old oscillations began as before, although no quinine was given for two days more. The patient was now in a very weak state, although the tongue kept fairly clean, and he was able to take a fair amount of nourishment. The aspect was that of a typhoid condition, with great mental depression and a little "wandering" at night. On October 29th I made the following note: "Heart normal, pulse full, soft, dicrotic, 85 per minute. The right lung showed slight dulness from the third to fifth rib in the nipple line, and extending round the axilla to the mid-dorsal line, but there was no cough, no pain, no crepitation, and no friction sound. Left lung normal, liver normal, spleen slightly enlarged, no swelling detected in left lumbar or sacral region, whence the pains radiate; left leg still held in position of slight flexion." Blood films taken showed the same mobile, hyaline organisms as before, and also a very considerable leucocytosis. Although I was unable from want of apparatus to make an exact blood count, a considerable experience of blood work enables one at once to say whether the leucocytes are increased or not in a given case. Allowing three leucocytes to an average field of normal blood evenly spread and examined with a $\frac{1}{6}$ in. objective, in the present instance sixteen fields counted gave ninety-nine leucocytes, or an average of say six to a field, just double the normal number. A differential count gave the following result: Small lymphocytes 18, large lymphocytes 9, polymorphonuclears 65, and eosinophiles 7 per cent., showing a slight decrease in the percentage number of small lymphocytes, an increase of mononuclears, and a very marked increase of eosinophiles. The malarial element would account for the increased number of large mononuclears, but the eosinophiles are difficult to account for unless due to the administration of antipyrin and quinine, or to the anæmia caused by the prolonged malarial fever (Cabot). At the same examination I drew a drop or two of blood into a pipette and sent it off to the Government Laboratory at Naini Tal to be tested by the Widal method; for, although enteric fever is unknown in the tea districts, and the patient's symptoms, apart from the continued remittent fever and general typhoid state, were not

very suggestive of that disease, yet there was a possibility of infection, since it was known that the patient, when out at work, was in the habit of drinking unfiltered water from the hands of the native water-carriers. This supposition would, however, not account for the considerable leucocytosis, since there is not usually an increase of leucocytes in typhoid fever; it was more suggestive of a suppurative process somewhere, and that not of a tubercular nature.

The question as to whether enteric fever exists in a mild form unrecognised amongst the general population of India is a very difficult one to determine. Slight fevers and frequent diarrhœas are so rife that they have little diagnostic value, while the general application of the serum test is out of the question, and the results often not to be depended upon alone.

The temperature continued to rise, reaching a maximum about noon, and declining towards evening. On November 9th slight hypostatic congestion of both lungs was noted, the other lung symptoms remaining as before. The treatment was of a general nature. So long as the *Hæmamœba malariæ* was present it was right to give quinine, which he was given in doses of not less than 20 grs. in the twenty-four hours, sometimes by the mouth, sometimes intramuscularly. Antipyrin was also given, and from November 6th to 16th liq. arsenicalis, 10 mins. twice a day, was given in addition to the quinine, and after the later date the syr. ferri phos. c. quin. et strychn. was given in half-drachm doses twice daily in addition. The bowels were kept open with small doses of colocynth and hyoscyamus. To return to the Widal test: six days after the dispatch of the specimen a telegram was received from Naini Tal, saying that only veterinary work was done there, and that the specimen had been forwarded to M. Haffkine, Bombay. On November 11th M. Haffkine telegraphed the following message: "Reaction for enteric fever strongly marked." This positive result seemed to confirm the suspicion that the patient was suffering from enteric as well as from malarial fever, and accounted for the failure of quinine to destroy the malarial parasite. There was no history of a previous attack of enteric fever. But the leucocytosis had still to be explained, and the stiffness and pain in the region of the psoas muscle were still present. The slight pulmonary symptoms noted above appeared to be purely of a passive nature and gave no trouble. From November 10th the temperature touched the normal line on one or two occasions, and did not afterwards reach so high a level as before, except on the 24th, when it registered 102°·2 F., the highest point touched during the whole illness. On the night of the 17th and frequently afterwards at night there was night-sweating, the patient waking up soaked in a cold perspiration. This is a symptom by no means exclusively connected with pulmonary phthisis. He had now been ill nearly three months, and as the nursing was rather difficult I took advantage of a fall in the temperature on November 25th to have him removed to Calcutta to hospital. He stood the long journey better than could have been expected, and the temperature was little raised. From this time onwards I regret that I have no detailed account of the case to give; but about three weeks afterwards I received a letter from the house surgeon to say that a large retroperitoneal abscess had been opened in the left loin, and that the patient was in a grave condition. However, he slowly improved, and six weeks later was able to proceed to England. He remained there for eight months, and returned to this district perfectly well again in November last.

The case was certainly a complicated one, and it is even now not easy to say what was exactly the original trouble. Malarial fever he certainly had, as shown by the parasites present. Did he also have enteric fever, as the serum test seems to show, or were the typhoid symptoms caused entirely by the deep-seated abscess? It seems to me that he really had a chronic abscess, accompanied by malarial fever, and that the positive Widal reaction was fallacious.

TREATMENT OF MALARIAL FEVER BY INTRA-MUSCULAR INJECTIONS OF QUININE.

By L. E. Ashley-Emile.

Sydenham Hill Sanatorium, North End, Port Elizabeth, South Africa.

Having read the articles in the Journal of Tropical Medicine on the treatment of malarial fevers by intramuscular injections of quinine, and the unpleasant experiences of some who have practised this method, I resolved to give the method a fair trial on strict aseptic principles, and during the past year I have had exceptional opportunities of doing so, and have treated some fifty cases, giving in all sixty-eight injections without a single accident.

I shall, therefore, point out as briefly as possible the plan which I adopt.

Technique. — Hands are carefully prepared, are washed from above the elbows down in warm water with biniodide soap, and nail-brushes kept in antiseptic fluid in air-tight glass boxes used freely, the arms and nails are several times well soaped, and the pared nails subjected to repeated cleansings; the arms and hands are both finally covered over with 1 in 1,000 sublimate solution, and are pressed down and kept for a few minutes in a basin of equal parts of sublimate solution, 1 in 1,000, and absolute alcohol, which solution is also carried over the arms

Site to be Operated Upon.—Wash thoroughly with antiseptic soap (the biniodide to be preferred) and warm water. A fresh piece of lint is used on each occasion, then rubbed with Scrubb's cloudy ammonia fluid, either pure or diluted in case of delicate skins, in order to remove all grease, until lint shows entire absence of dirt; the part is next scrubbed with carbolic lotion, 1 in 20, and finally with absolute alcohol; a pad of lint soaked in the same is left on the part while the injection is being prepared.

Appliances, such as syringe, test tubes, &c., are well washed in warm water, and, if there is no urgency, kept for an hour in carbolic lotion, 1 in 20, and washed with absolute alcohol before use.

Preparation of Solution.—Having filled the syringe (mine contains 20 minims) with water to ascertain amount required, it is emptied into a sterilised test tube and boiled over a spirit lamp. One grs. 5 "Tabloid" of

quinine hydrochloride is dissolved, and the solution repeated to a second boiling, the result being a slightly turbid solution, a drop or two of strong HCl. is added, which dispels the turbidity, leaving the solution quite clear. Syringe is filled, all air expelled, and the needle passed once or twice through the flame of a spirit lamp, and the injection is ready for use. The selected muscle is pinched up, and the needle thrust vertically deep into it while the fluid is warm. Slight pain is experienced at this stage while the fluid is being injected, but passes off on completion. The fluid is injected slowly and intermittently; needle is kept *in situ* for a few minutes, and the lump which forms is gently stroked with fingers of left hand to aid absorption, after which the needle is rapidly withdrawn; the left index-finger is placed over the puncture point and kept there until the skin contracts and completely closes the orifice. Puncture may be smeared with vaseline, but I prefer painting the site over with liniment of iodine, as advocated by Dr. Sims, of Congoland. A pad of lint soaked in absolute alcohol is applied, and covered with a larger piece, and maintained in position by a few strips of adhesive plaster.

Bearing in mind the unpleasant complications which may arise from this method, viz., abscess, tetanus, &c., I am of opinion that this plan should not be adopted as a routine therapeutic measure for all cases of malarial fever, but reserved as an invaluable adjunct to the ordinary method for intractable cases where quinine cannot be administered and tolerated by the mouth, as in certain remittent and pernicious types of the disease, when accompanied with excessive vomiting and pronounced nervous symptoms, with delirium, and especially in malarial coma.

When to Use Quinine Hypodermically. — I have found this plan most effective in reducing the temperature of persons who have by excessive daily usage established a tolerance for the drug, and in whom 40 to 60 grains of quinine given by the mouth has failed to produce the desired result, when a single injection of 5 grs. of quinine has lowered the temperature. I can recall to mind two such cases in my series where quinine, given in large doses by the mouth, entirely failed to reduce the temperature; and the patients rapidly passing into a moribund condition, but for the timely injection would most assuredly have succumbed. Thus encouraged by my success, I now adopt the routine practice of exhibiting quinine injections if on the third day the temperature still remains high without any signs of abatement, and without the least hesitation if the patient has been addicted to large doses of quinine as a prophylactic measure.

Seat of Injection.—With regard to choice of the muscle for operation, I prefer the deltoid and interscapular muscles to the gluteal for many reasons; the skin over the former muscles is easily cleaned, and in African natives it takes a great deal of scrubbing to render the part thoroughly aseptic, and the difficulty is greatly enhanced should the gluteal region be selected. Moreover, the skin being tougher in that region frequently bends and bunts the needle; and lastly, in case of abscess formation, the latter situation would occasion much discomfort and inconvenience. The injection should be made deep into the muscle, and never under the skin into the loose areolar tissue, for during the reactionary stage there is a certain amount of inflammation after quinine injections which is in proportion to the extent of asepsis attained; the deep fascia forms a somewhat effective barrier against the entrance of any germs through the skin and, acting as a pad, maintains constant and equable pressure which soon hastens resolution. For a similar reason, the forearm is quite unsuitable for quinine injections, which become hypodermic and not intramuscular; the loose areolar tissue, a structure prone to inflammatory changes, should infection take place through the ducts of sebaceous glands and hair follicles, proves a frail barrier and the skin rapidly sloughs away. My favourite salt is the hydrochloride of quinine, and in "Tabloids" of 5 grs. each can easily be carried about when travelling; it freely dissolves without the aid of an acid. I, however, add a drop or two of strong HCl. to clear the solution, though it is unnecessary if the injection is made when warm, for on cooling the salt becomes precipitated if no acid is added, and may give rise to irritation. The puncture should in all cases be smeared over with vaseline, or flexile collodion applied. I prefer painting the part with liniment of iodine in view of its counter-irritant and antiseptic properties. A pad of lint soaked in absolute alcohol should be applied over the part, which exercises pressure, aids rapid absorption, and prevents the ingress of septic matter—a procedure of great importance when treating African natives, whose hygiene is not above suspicion.

Contraindications. — Quinine injections are inadvisable in all cases suffering from any ulcerative septic disease, and in very young children.

Conclusion.—In conclusion, I cannot but advocate the more extended employment of intramuscular injections in the class of cases ennumerated above, after proving the many advantages this method has a claim to, viz.: (1) Economy; (2) certainty of action; (3) rapidity of action; (4) when oral administration is not feasible; (5) and lastly, when tolerance is established from excessive doses of quinine taken as a prophylactic measure.

MEMORANDUM ON A FORM OF INITIAL LESION OFTEN DEVELOPING INTO CHRONIC ULCERS.

By F. Creighton Wellman, M.D.
Angola, West Africa.

There have come to the writer's notice in this region several varieties of ulcers, among which may be mentioned the "veldt sore," an ulcer which is probably the sloughing phagedæna which has been described from other parts of the Tropics, the so-called "malarial" ulcer (named thus principally because it as a rule heals rapidly under the local application of quinine), and another more indolent sort which forms the subject of this observation. I had noted the fact that the very frequent applicants for treatment who

came with these ulcers last mentioned generally described them as commencing in the shape of a blister "which came of itself." And some time ago a Bantu boy, whose sister had one of the ulcers under discussion on her leg, came to the dispensary with a large bleb on his cheek, another smaller one on the elbow, and a third on the inner surface of the leg just above the ankle. The natives who were about all assured me that these blebs were the initial lesions from whence "chronic sore" originated, saying that the ulcers follow only when the blisters appear on the lower limbs. I persuaded the boy to remain without treatment, and in a few days the vesicles on the face and arm had disappeared (the one on the face, which I punctured for the purpose of examining its contained fluid, being the first to go), while the one on the leg had resulted in a small area of inflammation, the central portion of which was covered with a crust composed of inspissated serum, dirt, &c. On removing this crust a shallow ulcer was revealed which looked like other "chronic sores" which I had seen in their early stage. The boy now refused to remain any longer without being treated, so the sore was swabbed with pure carbolic and an antiseptic dressing applied. It was healed at the end of a week. Fluid from the large bleb on the cheek (which was rather larger than a shilling piece) was seen under the microscope to be swarming with bacteria, which, on being sown in culture media, proved to be staphylococci.

TABES MESENTERICA AND CEYLON SOREMOUTH AND DIARRHŒA.[1]

The Differential Diagnosis and Treatment; Complications and their Treatment and Results.

By William A. Wijeyesakere, M.R.C.S.Eng.
District Medical Officer, Ramboda.

On January 20th, 1900, I read a paper before your Association on the "Etiology and Causation of Ceylon Soremouth and Diarrhœa."

Subsequently, on November 27th, 1903, I read a paper identifying the disease as tabes mesenterica, and now I come before you for the third time to prove that the remedies that I prescribe for the disease are efficacious.

Before doing so I will attempt here to differentiate the disease from those that are identical in appearance with it.

Dysentery.

In dysentery the invasion of the disease is sudden and preceded by rigors. The desire to go to stool is intense. There is great thirst, the defæcation is attended with tormina and tenesmus, and the dejections are largely mixed with blood. The presence of Kruse's bacillus in the motions is, of course, a sure test of dysentery.

In tabes mesenterica the invasion of the disease is subtle and slow. Thirst, tormina and tenesmus are absent. Blood is passed separately from the motions.

Malarial Cachexia.

In so-called malarial cachexia there is frequent recurrence of ague, and further, there is the striking feature of the enlarged spleen or *ague-cake*. The skin has a saffron-yellow or lemon tint.

In tabes mesenterica the above symptoms are absent, and there is loss of pigment from the skin.

Ankylostomiasis.

There is no doubt that nearly every bare-footed person in the Tropics harbours ankylostoma in the bowels from infancy. Professor Loos's recent researches on ankylostomiasis have proved that the larvæ are capable of entering the human system through the unbroken skin. The presence of this worm lowers the general resisting power of the organism, by disturbing the normal course of metabolism, and thereby the subject becomes more susceptible to tubercular infection.

The patient suffering from tabes mesenterica can be differentiated from this and other allied diseases by the bacteriological examination of the urine for the presence of the tubercle bacillus, or by the inoculation of tuberculin for the reactionary fever, or by the serum agglutination test for tubercle bacillus.

Treatment.

The first object in view in the treatment of a patient suffering from this disease is to cure the diarrhœa, if possible, or to control it to the least number of motions by the administration of drugs and by regulating the diet. To attain this result I have, for several years, tried various drugs, such as tinct. iodi, tinct. guaiaci, guaiacol, liq. hydrargyri perchloridi, creasote and carbolic acid. During the last three years I have only used carbolic acid pure, and find it the most efficacious and the cheapest drug. The patients take it without complaint for any length of time, in the form of the following prescription :—

℞ Carbolic acid . .	... ...	♏xxxii.
Tinct. chloroform co.	... ...	ʒi.
,, card. co.	... ...	ʒi.
,, Aurantii	... ...	ʒss.
Aqua ad	... ...	ʒxxxii.

All the patients admitted into the hospital suffering from this disease are in a very low state of vitality, as indicated by the swollen feet and the dilated condition of the right side of the heart. For these symptoms I use a daily hypodermic injection from the day of admission, of liq. strychnin. ♏v. for adults, and a less quantity in the case of children. These injections may be continued without producing any evil effects for even three months. So far as I have observed, strychnine does not cause increased peristalsis of the bowels and so increase their action. As soon as the patient begins to pass only one or two formed motions a day, while still continuing the above-mentioned remedies, I direct my attention to curing the secondary anæmia that these patients invariably suffer from, by the administration of Blaud's pills. I give one pill at bedtime, and increase by one daily till the number reaches eighteen; then I reduce by one daily, till the number is reduced to one again, and finally I discontinue them altogether. Then I submit the urine

[1] Read before the British Medical Association, Ceylon Branch, on March 10th, 1905.

again for bacteriological investigation, and if the tubercle bacillus is still present the above treatment should be repeated. The following is the prescription of the Blaud's pill I administer:—

℞ Ferri Sulph. ... ... grs. xxv.
Pot. bicarb. ... ... ʒss.
Pulv. Tragacanth. ... ... q. s.
Misce fiat pil. 18.

During the whole course of this treatment the patient is confined to a milk diet, consisting of:—

Milk ...	30 ozs.	Tea ...	½ oz.
Sugar ...	3 ozs.	Bread ...	8 ozs.

for the twenty-four hours. On the fifth or sixth day of this treatment the patients complain of insufficiency of food, otherwise there is no trouble with them; they generally submit to it without grumbling.

Complications and their Treatment.

Erysipelatous swellings of the legs and feet are a frequent complication. If this extends to the thighs, it is an indication that the case is hopeless. If any of the patients in the hospital show the least indication of swelling in the feet, or are admitted with swollen feet, the repeated application of the following pigment to the swellings will successfully arrest the progress of this often fatal complication.

℞ Acid tannic ... ... ʒii.
Camphoræ ... ... ʒss.
Spt. ætheris ... ... ʒi.
Misce fiat pigment.
To be applied externally when necessary.

Sometimes the swelling abates in all parts, but persists in the feet for a considerable time, and in these cases it is necessary to supplement the patient's diet with the addition of a little stimulant, a fresh egg daily, and half a pound of raw meat twice a week. The raw meat should be minced, mixed with a dash of salt and pepper, and be given to the patient. With a very few exceptions they take it without grumbling.

Recrudescence of the diarrhœa takes place sometimes while the patient is taking his course of Blaud's pills, if the weather is very wet. This can be avoided by keeping the patient warmly clad, and allowing him a blanket at night; there is no necessity to alter or discontinue the treatment he is undergoing, or to change the diet.

When the tubercular process becomes general and reaches the bladder, the external genitalia become suddenly swollen, accompanied with irritability of the bladder. The repeated application of the above-mentioned ether pigment to the swollen parts, after fomentation with hot water over the bladder, causes the symptoms to subside. On no account should the parts be incised with the object of relieving the swelling. I have seen disastrous results follow the adoption of such a procedure in a hospital not far from Colombo.

Ulcerations of the cornea are, as a rule, never developed among the patients in the hospital admitted without them. But they are often admitted with them. They can be successfully treated by quickly brushing the cornea with a soft camel's hair brush dipped in one in 20 per cent. solution of argenti nitratis, then washing off the nitrate of silver solution with a 5 per cent. solution of warm boracic acid, and finally applying Pagenstecher's ointment to the eye, bandaging the eye with a pad of absorbent cotton-wool placed over the closed eyelids. I renew these dressings every fourth day till the eyes are cured.

When there is otorrhœa, due to secondary tubercular infection of the middle ear, I fill in the ear with powdered boracic acid, and apply a plug of absorbent cotton-wool to the external auditory meatus, to prevent the powder escaping. The powder being dissolved by the discharge from the middle ear, acts as a curative agent. This treatment may be adopted as often as is necessary.

Occasionally the tubercular process extends to the suprarenal capsules; then the patient develops well-marked clinical symptoms of Addison's disease, such as the feeble action of the heart, great weakness, pigmentation of the inner sides of the cheeks, tongue, and the flexures of the joints. I have had two such cases recently under my treatment, but I adopted no special treatment in them. One patient succumbed to the disease, the other was cured by the treatment I have described.

In a few cases ankylosis of the knee-joint follows as a result of tubercular arthritis of the joint; this can be cured by the gradual pulley and weight system of extension.

The patients who are retained in the hospital after a course of treatment, owing to their extreme emaciation, can be fattened by daily inunction of four ounces of cod liver oil, and by compelling the patient to wear the same article of clothing next to the skin while this treatment lasts.

The most fatal complication in this disease is poromenitis, or the sudden effusion of serum into the serous cavities, such as the pericardial, the pleural and the peritoneal. One must be on the constant watch for the least indication of this untoward symptom, as it can be averted by a timely application of a fly-blister to the part affected, when the patient complains of pain in the region involved. When the pericardium or pleura is affected, the pain is accompanied by a certain amount of dyspnœa. When the effusion has already taken place, the only way to treat it is by paracentesis and letting out the fluid and preventing the re-accumulation of it, by the injection of adrenalin chloride.

As a result of suppuration of the enlarged sebaceous glands of the skin, tubercular ulcers form in various parts of the bodies of these patients; these can be successfully treated by scraping, and by the application of iodoform and glycerine, and when the ulcers are filled up with granulations, Unna's paste completes the cure.

Patients who have been discharged from the hospital after a course of treatment for tabes mesenterica have, not infrequently, been readmitted with pulmonary consumption as a result of the tubercular process extending into the lungs. The treatment of these cases I need not detail here for obvious reasons.

I have recently had under treatment in the hospital three cases of Pott's disease as the result of the invasion of the tubercular process to the vertebræ of

Medical Report on the State of Selangor for the Year 1903.

By E. O. A. TRAVERS.

State Surgeon.

"*Beri-beri Hospital, Jeram.*—This is the third complete year of this hospital's existence, and, as I pointed out, it acts as a district hospital for Jeram as well as a beri-beri hospital. The room taken up by the other diseases should not be grudged, as it keeps the dresser in more active touch with his work than if he had simply to attend convalescent beri beri cases. The number treated was as follows :—

	1901.	1902.	1903.
Beri-beri	138	112	114
Malaria	27	31	29
Other diseases	46	49	52
Total death-rate	15·11	10·41	9·23
Beri-beri total death-rate	21·69	12·50	10·52

"It is satisfactory to note the still further decrease in the death-rate of the beri-beri patients. It will further decrease, I hope, as the compound is better drained.

"The number of beri-beri who contracted malaria was less than it hitherto has been, and I had hoped that by locking up the patients at night this number would have been still further reduced. Unfortunately, towards the end of the year, a large part of the mosquito-proof gauze was damaged by the wind.

"The compound has been still further improved, and the drainage would now be quite satisfactory could the outlet drain be kept open. This, however, appears to be impossible, and a new scheme for drainage is under consideration.

"Again I have pleasure in recording an improvement in the health of this district as a whole, the percentage of malaria treated at the hospitals having fallen from 23 per cent. in 1902 to 14·1 per cent. in 1903. This great improvement has been brought about by the drainage of the inhabited parts of the district, of which not the least important work was the Jeram drainage scheme.

"A very large area has been drained and shares in the improvement, which is extremely satisfactory and encouraging."

Ulu Selangor Hospitals.

The district hospitals at Kuala Kubu, Rawang and Serendah have throughout the year been under the care of District Surgeon Dr. Delmege, who reports as follows on the work done during the year :—

"The total number of cases treated was as follows :—

	In-patients.	Death-rate.	Out-patients.
District Hospital, Kuala Kubu	1,927	20·4	6,069
,, ,, Serendah ...	1,080	11·6	3,831
,, ,, Rawang ...	930	10·09	2,226
Dispensary		...	4,865

"There has been an increase in mortality at Kuala Kubu and Serandah, and a decrease at Rawang."

The very high death-rate among patients at the Kuala Kubu Hospital calls for special mention. It will be seen that it is almost double that for the other two hospitals in the district. The diseases causing the largest number of deaths were :—

	Cases.	Death-rate.
Diarrhœa ...	293	... 42·66 per cent.
Dysentery ...	89	... 65·16 ,,
Beri-beri ...	164	... 40·45 ,,

The death-rate among cases of beri-beri treated in the other two hospitals in the same district was 9·25 per cent. at Serendah and 7·52 per cent. at Rawang.

It is difficult to account for the extraordinary difference in the mortality at these three hospitals. The patients are drawn from a mining population in each case, and the hospital accommodation and equipment at Kuala Kubu is superior to that at Serendah and Rawang.

During the present year every effort will be made to reduce the death-rate, and it is hoped that an appeal to the mining community will result in the admission of the miners at an early stage of disease, when there will be a reasonable hope of their recovery.

District Hospital, Kajang.

This hospital has throughout the year been under the care of Apothecary Ngai Leung. The work done at this hospital was as follows :—

Year.	Total treated.	Deaths.	Death-rate.
1902 ...	1,223 ...	87 ...	7·11 per cent.
1903 ...	1,105 ...	90 ...	8·14 ,,

One hundred and seventy-five cases of beri-beri were treated, with 11 deaths, giving a percentage of 6·28.

Veterinary Department.

Mr. T. A. Ford, Veterinary Surgeon, reports as follows upon the work done during the year :—

"The following outbreaks of epidemic disease occurred during the year :—

"*Rinderpest.* — At eighth mile Cheras road and twelfth mile Langat road seven bullocks and seven buffaloes died ; I could not trace the origin of this outbreak. The disease did not spread to any extent, only the immediate in-contact animals being attacked. The outbreak was generally of a subacute type, most of the animals living for four or five days, and in some cases longer. Strict isolation of all animals, with closing of the roads at seventh and tenth mile Cheras and fourteenth mile Ulu Langat roads from August 29th for five weeks was found sufficient to prevent any spread of the epidemic.

"At the cattle quarantine station, Port Swettenham, an outbreak occurred on November 11th, when a buffalo recently landed from Penang died suddenly, and was found on *post-mortem* examination to have died of rinderpest.

"The disease spread very rapidly among the cargo of thirty buffaloes and from them to the bullocks in other sheds, and was the cause of twenty-seven deaths. Eight buffaloes were shot in the early part of the epidemic, with the hope of stamping out the outbreak. On November 22nd the disease had spread amongst the bullocks, and the infection was so

general I deemed it useless to destroy any more sick beasts, with the result that ten bullocks and three buffaloes recovered, and were released on December 20th.

"A number of *post-mortem* examinations were made in conjunction with Dr. Daniels, Director, I.M.R.

"On the question of the treatment of rinderpest, I may mention that acute cases succumb so rapidly there is no time to do anything; but in the subacute cases, after consultation with Dr. Daniels, who suggested magnesia sulphate (Epsom salts), I decided to take two cases which were passing watery stools, mixed with a good deal of blood, and sloughing mucous membrane.

"The doses given were about 2 ozs. in half a pint of water four times a day. The effect was to stop the straining and bleeding, and I think the animals looked brighter and more inclined for food; some other cases in which this drug was given without my knowledge, until they were released, also did well. This is not a specific, but appeared to guide the disease through one of its stages, by rendering the stools more watery and capable of being passed with less straining.

"*Foot-and-Mouth Disease.*—With the exception of the months of June, July and December, this disease has prevailed during the whole year, small, more or less isolated, outbreaks occurring all over the State. The total number of animals attacked was 354, and the most in any one month was 124 in September, Compared with 1902, these numbers are very small. and the improvement is, I think, due to the greater vigilance shown in isolating animals and the much drier weather.

"*Rabies.*—Four cases of this disease were met with during the year, in June and July; one a case of furious rabies which bit two people, another was a case of the dumb form of the disease. The other two dogs both showed obscure symptoms of being ill, but nothing in any way diagnostic. Rabbits inoculated with brain matter from these four cases all died, after a longer or shorter period of incubation, of paralytic rabies, the usual form for this disease to take in the rabbit. I would also remark that, so far as I am aware, although several dogs were bitten, in no case had rabies developed in any of the bitten animals, and I have carefully watched three dogs, undoubtedly bitten by subsequently proved to be rabid animals, which up to the time of writing have remained perfectly healthy.

"*Surra.*—One case of this disease was found in an Australian horse belonging to H.H. the Sultan of Selangor, and the parasite *(Trypanosoma wansi)* demonstrated to Dr. Daniels, who saw the case with me. Rats and guinea-pigs inoculated at the Institute of Medical Research with the blood from this horse died, and the parasites were found in abundance in the blood of the guinea-pigs. I have not heard that this disease has been met with in the F.M.S. before, and made it the subject of a special report to Government.

"*Prosecutions.*—During 1903 the following prosecutions were conducted: For adulterating pork with water, four at Kuala Kubu; fines from 50 dollars to 100 dollars were imposed. For insanitary sheds, 13; fines from 8 dollars to 50 dollars. For removing diseased and in-contact animals, 5; fines from 50 dollars to 200 dollars. For not reporting contagious diseases, 6; fines from 15 dollars to 50 dollars. For allowing cattle to stray contrary to *Gazette* notification, 4; fines from 10 dollars to 25 dollars. For cruelty to a bullock by burning his eyelids, 1; fined 50 dollars. For not registering as a cowkeeper, 1; fined 50 dollars.

"*Milk Licences.*—Sixty-seven licences were certified for during 1903, representing buffalo cows 113, calves 71, cows 266, calves 252, owned in Kuala Lumpur for milking purposes, a total of 702 animals. All the cowsheds are floored with cement or good bricks before a certificate of fitness to keep the animals is granted, and I find I now have little difficulty in getting the owners to keep their pens clean and sanitary."

Examination of Petroleum at Port Swettenham.

The testing of petroleum was carried out by the Deputy Health Officer at Port Swettenham under the superintendence of Dr. Watson.

The total petroleum imported was 1,102,392 gallons. No petroleum was rejected as unsafe.

Six thousand five hundred and fifty-two gallons of gasoline were also imported.

The number of samples of petroleum tested was 41, and the revenue collected was $565.

The following returns are attached:—

(*a*) Return of patients treated in all hospitals during the year 1903;

(*b*) Return of diseases more commonly treated with percentage of deaths during 1902 and 1903;

(*c*) Number of beri-beri cases treated in State hospitals from 1883 to 1903;

(*d*) Return of sick convicts treated in the gaol from 1883 to 1903;

(*e*) Vaccination return for the State for the year 1903;

(*f*) Return of small-pox treated in the State during the year 1903;

(*g*) Comparative return of out-door patients treated from 1894 to 1903;

(*h*) Number of police admitted into the General Hospital from 1901 to 1903.

No. 6.—FEDERATED MALAY STATES.

RETURN OF DISEASES AND DEATHS IN 1903 AT ALL HOSPITALS IN SELANGOR.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	8	1	8
Anæmia	333	64	359
Anthrax	—	—	—
Beri-beri	1662	351	1912
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	4	—	4
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	241	23	255
Delirium Tremens	1	—	1
Dengue	39	—	39
Diabetes Mellitus	1	—	1
Diabetes Insipidus	—	—	—
Diphtheria	1	1	1
Dysentery	621	229	638
Enteric Fever	23	15	24
Erysipelas	7	1	7
Febricula	1	—	1
Filariasis	—	—	—
Gonorrhœa	304	1	322
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	1	—	5
Kala-Azar	—	—	—
Leprosy	150	73	279
(*a*) Nodular	9	9	60
(*b*) Anæsthetic	9	5	67
(*c*) Mixed	—	—	—
Malarial Fever—			
(*a*) Intermittent—			
Quotidian	53	—	54
Tertian	95	4	99
Quartan	110	2	118
Irregular	265	35	470
Type undiagnosed	1104	17	1134
(*b*) Remittent	13	12	13
(*c*) Pernicious	28	17	30
(*d*) Malarial Cachexia	266	51	292
Malta Fever	—	—	—
Measles	2	—	2
Mumps	7	—	7
New Growths—			
Non-malignant	22	—	22
Malignant	10	7	10
Old Age	—	—	—
Other Diseases	30	8	32
Pellagra	—	—	—
Plague	6	5	6
Pyæmia	1	1	1
Rachitis	—	—	—
Rheumatic Fever	5	—	5
Rheumatism	838	4	917
Rheumatoid Arthritis	4	—	4
Scarlet Fever	—	—	—
Scurvy	—	—	—
Septicæmia	3	3	3
Sleeping Sickness	—	—	—
Sloughing Phagedæna	79	11	81
Small-pox	1	—	1
Syphilis—			
(*a*) Primary	155	—	166
(*b*) Secondary	113	1	121
(*c*) Tertiary	210	14	238
(*d*) Congenital	2	—	3
Tetanus	2	1	2
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
Other Tubercular Diseases	21	5	24
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	1	—	1
Yellow Fever	—	—	—

LOCAL DISEASES.

Diseases of the—			
Cellular Tissue	271	10	286
Circulatory System—			
(*a*) Valvular Disease of Heart	43	17	45
(*b*) Other Diseases	9	1	11
Digestive System—			
(*a*) Diarrhœa	1034	359	1074
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	3	—	3
Congestion of Liver	1	—	1
(*d*) Abscess of Liver	6	5	8
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	19	3	19
(*g*) Cirrhosis of Liver	61	39	67
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	3	—	3
(*j*) Other Diseases	143	22	150
Ear	27	—	27
Eye	183	19	236
Generative System—			
Male Organs	223	1	293
Female Organs	36	1	41
Lymphatic System	69	2	71
Nervous System	273	83	355
Nose	12	—	12
Organs of Locomotion	122	14	129
Respiratory System	764	266	806
Skin—	—	—	—
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	75	—	77
(*f*) Other Diseases	1870	7	1994
Urinary System	100	26	110
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	1	1	1
(*c*) Other Injuries	1144	42	1205
Parasites—			
Ascaris lumbricoides	6	—	7
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	12	3	12
Dracunculus medinensis (Guinea-worm)	2	1	2
Tape-worm	4	—	5
Poisons—			
Snake-bites	16	3	17
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	8	—	8
Surgical Operations—			
Amputations, Major	63	9	64
,, Minor	163	1	165
Other Operations	2	1	2
Eye	40	—	40
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

No. 7.—FIJI.

MEDICAL REPORT FOR 1903.

By B. GLANVILLE CORNEY, Chief Medical Officer, Fiji.

Population.

(1) The estimated population of the colony at the end of the year amounted to 121,074 persons, and was made up of the following classes in the proportion shown:—

	Males	Females	Total
Europeans and other Whites ..	1,580	1,011	2,591
Aboriginal Fijians	48,522	42,381	90,903
East Indian Immigrants (including their children born in Fiji)	14,233	7,268	21,501
Melanesian and Malayo-Polynesian Immigrants	1,617	350	1,967
Rotumans	1,034	1,041	2,075
Half-castes and other degrees..	800	777	1,577
All others..	250	210	460
Total	68,036	53,038	121,074

These figures represent a decrease of 851 from the foregoing year's estimated population, caused mainly by an increased mortality among the aboriginal Fijians, the natives having diminished during the twelve months by 2,481.

Births and Deaths.

(2) The total births registered numbered 4,226, or six less than in the previous year. The total deaths amounted to 6,551, as against 4,306 during 1902, the abnormal mortality of 2,245 (or at the rate of over 52 per cent.), being partly caused by an epidemic of measles. Arrivals and departures from the Colony were not enumerated.

The birth-rate calculated on the *mean* total population for the year was 34·78 per mille, and the death-rate on the same basis was 53·91 per mille. The former figure was ·75 below, and the latter 18·60 per mille above, the corresponding results in the previous year. These figures are calculated on the estimated mean population, all races and classes, as obtained from the Registrar-General's returns. Details of the population of the Island of Rotuma, a dependency of the colony, are appended.

(3) Some further particulars regarding the births, deaths, and marriages which took place among the various racial denominations in the colony are afforded in the following tabular statement:—

Races or Nationalities	Births	Deaths	Marriages
Europeans	93	50	23
Fijians	3,244	5,727	1,027
Indians	730	570	349
Polynesians	8	54	9
Rotumans	108	110	31
Half-castes	37	31	16
Others	6	11	4
Total	4,226	6,551	1,459

Nearly all these figures differ rather materially from the corresponding ones for 1902, except the total number of births. The increased mortality has been alluded to in paragraph (2), and there is a falling off in marriages to record, which may perhaps be partly accounted for by the same cause.

(4) The table of vital statistics appended (Return A) relating to the various racial populations in the colony is prepared in accordance with the suggestions circulated in the Model Medical Report Form, and is intended to express the information it contains in a form convenient for comparison with those from other Crown colonies.

Measles Epidemic.

(5) The one prominent occurrence during 1903 was an epidemic of measles, the first cases of which occurred in a straggling way in the vicinity of Suva, and appeared to be indirectly traceable to a convalescent European who arrived from New Zealand.

A special report on this outbreak by Dr. G. W. A. Lynch, the Senior Medical Officer, who was acting for the Chief Medical Officer (on leave) during the whole time of its continuance, is appended. In it is shown that nearly half the aboriginal population was attacked to the number of 44,385 cases, and that the deaths among them from this cause amounted to 1,825, which is at the rate of 41·11 per mille attacked, whereas among the 1,113 cases of measles which occurred in all other races in the colony during the same period the deaths were only 7, or at the rate of 6·28 per mille of cases.

The general epidemic of measles which occurred in Fiji in 1875, attacking almost every native, when their total population was estimated to be 150,000, was accountable for some 40,000 deaths, a ratio of more than one in four.

The greatly lessened mortality from the epidemic of 1903 is attributable to (1) immunity of half the population through previous attack; and (2) the effect of this immunity of half the population, whose services in attending on the sick, restraining them, and providing for them, were thereby secured; (3) special teaching and cautions given to the people in every village by means of printed circulars regarding the nature and treatment of measles; and (4) general advance in instruction and civilisation of the people during the thirty years.

The mortality, which was nevertheless higher than is usual among Europeans and other civilised peoples, is ascribed chiefly to enteritis and dysentery, occurring as sequelæ, and to the "obstinacy and folly, not ignorance," of the adult patients in disregarding the cautions and instructions circulated among them, and in yielding to the impulses of the moment, such as appetite for food, or desire to bathe, without regard to consequences.

No death from measles occurred in any European patient.

the spinal column. I treated these with the routine treatment mentioned in text-books, but all the three patients succumbed as a result of the formation of recent and extensive bed-sores.

When tabes mesenterica becomes chronic it is very intractable, with frequent relapses. I have re-admitted a patient for the fourth time. The only way to prevent these relapses is to advise the patient to subsist on milk, Plasmon, meat juice, meat powders, &c. As estate labourers cannot afford them, relapses and deaths among them will continue.

There is an idea commonly prevalent both among the natives of this island and the immigrant labourers that cocoanut milk and oil in the curries act as a prophylactic against all tubercular diseases. Among the Sinhalese, cocoanut milk forms a constant ingredient in their curries; the Tamils rarely use it. While the children of both these races commonly suffer from tabes mesenterica, the disease is rarely met with among the Sinhalese, after the curry and rice-eating age has arrived; among the Tamils it is met with in all ages. This circumstance lends colour to this popular idea, and is worth enquiring into.

Results.

The following are the results achieved during the last four years by adopting the treatment I have described among the patients suffering from tabes mesenterica, which I venture to say is very prevalent all over the island. The total treated, the number of deaths, and the percentage of deaths to the total treated for the last four years in the District Hospital, Ramboda.

Year	Total treated	Number of deaths.	Percentage of deaths to total treated
1901	377	81	21·48
1902	342	70	20·46
1903	322	35	10·86
1904	261	28	10·72

Histories of Cases.

I annex the histories of a few typical cases of tabes mesenterica treated by me in the District Hospital, Ramboda, and I avail myself of this opportunity to thank Professor Castellani, M.D., for the help he has afforded me in verifying the clinical diagnosis of the patients suffering from this disease by bacteriological examination of the urine for tubercle bacillus.

Case 1.—In this case the Director of the Bacteriological Institute reported the presence of tubercle bacillus in the urine on January 22nd, 1904, and the patient was discharged cured on March 10th, 1904. Up to date there are no symptoms of recurrence of the disease.

Sellai. Admitted January 18th, 1904. Malabar estate labourer. Female, age 26. Married. Complained of anæmia and swelling of the lower extremities. Ill thirty days previously, but stated that before this illness she had not suffered from anything, and declined to give her family history.

Symptoms.—Sclerotics tinged yellow. Cheeks puffy. Tongue denuded of epithelium. Tonsils sound. Chest emaciated. Visible pulsation of the jugulars. Right heart dilated, systolic bruit, with its maximum intensity at the apex of the heart. Pulse small, quick, soft. Skin warm. Abdomen puffy. Liver contracted. Spleen normal. Bowels relaxed, about four semi-feculent motions every twenty-four hours. Erysipelatous swelling of the right leg and foot. Temperature, 103° F.

Treatment.—Milk diet. Carbolic acid mixture twice daily. Hypodermic injection of liq. strychnin. ♏v., once daily, and Ether pigment applied to swollen parts twice daily.

From January 25th she began to pass formed motions once daily, after which Blaud's pills were administered. There was a return of diarrhœa from January 30th to February 2nd. Her temperature became normal on February 3rd, and she was discharged cured on March 10th.

Case 2.—In this case the urine was examined before and after treatment by Professor Castellani. In the former instance the presence of tubercle bacillus was reported; in the latter, its absence.

Nalloo. Admitted October 1st, 1904. Malabar estate labourer. Male, aged 12. Ill three weeks before admission. Family and previous history good.

Symptoms.—Dyspnœa on exertion. General weakness. Anæmic. Puffy, wax-like skin. Sebaceous glands enlarged. Sclerotics tinged yellow. Denudation of epithelium from the ocular conjunctivæ. Tongue pale, denuded of epithelium at tip. Throat relaxed. Visible pulsation of jugulars, and in the tracheal fossa. Right side of heart dilated; heart sounds accelerated. A presystolic bruit heard with its maximum intensity at the apex of the heart. Abdomen puffy and warm. About two motions in twenty-four hours.

Usual treatment and diet adopted, and the patient was discharged cured on November 6th, 1904.

Case 3.—In the two following cases a mother and child were admitted to the hospital on October 5th, 1904, and on October 14th Professor Castellani reported the presence of tubercle bacillus in the urine of both patients. The child died, but the mother recovered.

The child Poochie. Malabar estate labourer. Female, aged 10. Ill one month before admission. Father and three sisters died with similar symptoms. Had influenza four months previously.

Symptoms.—Profoundly anæmic. Chest and arms emaciated. Rest of body and lower extremities swollen. Sclerotics tinged yellow. Constant running from nostrils. Tongue white and pigmented. Sebaceous glands of the skin enlarged. Denudation of epithelium from the ocular conjunctivæ. Visible pulsation of jugulars. Right side of heart dilated. Heart sounds accentuated and diffused. Pulse small, quick, soft. Liver contracted. Abdomen warm, puffy. Scanty motions constantly passed in bedclothes, consisting of green mucus. No appetite. Temperature 99° F.

Usual diet, with the addition of 1 oz. arrack daily, and usual treatment adopted. She rallied on the 12th. Temperature became normal, and one formed motion was passed. On the 13th she became worse, and died on the 14th.

Post-mortem Examination.—Right side of heart

dilated, distended with white clots of blood. Liver contracted, and nutmeg-like in appearance. Mesenteric and retroperitoneal glands enlarged.

Case 4.—*The mother, Carpie.* Malabar estate labourer. Female, aged 40. Ill three weeks before admission on October 5th, 1904.

Symptoms.—Dyspnœa on exertion. General weakness. Bloated appearance. Profound anæmia. Sebaceous glands of skin enlarged. Sclerotics tinged yellow. Denudation of epithelium from the ocular conjunctivæ. Tongue coated with betel juice. Visible pulsation of jugulars. Right side of heart dilated; hæmic bruit, with its maximum intensity heard at the apex of heart. Heart sounds feeble. Pulse soft and quick. Passed about five semi-feculent motions in twenty-four hours. Appetite good. Temperature normal.

The usual diet and remedies were administered, and she made an uninterrupted recovery, and was discharged cured, November 12th, 1904. She has been under observation since, and up to date there is no recurrence of the disease.

Case 5.—In this case the presence of tubercle bacillus was reported by Professor Castellani on October 18th, 1904.

Amirthan. Malabar estate labourer. Female, aged 25. Ill for some time before admission on October 9th, 1904. Married. Had five children; four died from diarrhœa. Youngest said to be suffering from the same disease on the estate.

Symptoms.—Hair falling off. Skin of scalp desquamating. Skin waxy. Sebaceous glands enlarged. Sclerotics tinged yellow. Denudation of epithelium from the ocular conjunctivæ. Angles of mouth sore, unable to open mouth properly. Breath foul. Tongue small, denuded of epithelium. Chest emaciated. Heart sounds feeble. Pulse small and feeble. Abdomen retracted. Liver contracted. Had not menstruated for five years. Appetite impaired. Had about twelve motions, consisting of blood and mucus, in twenty-four hours. Complained of tormina and tenesmus, but not thirst. Temperature normal.

Usual treatment and diet adopted.

On October 10th lower eyelids became swollen. On the 20th complained of pain in the throat due to ulceration. On the 29th complained of severe pain in the liver; application of a fly blister gave relief. From November 4th passed only one formed motion a day. On November 11th complained of severe earache and a watery discharge from both ears. Powdered boracic acid and cotton-wool were applied. On November 18th, at 4 a.m., expired suddenly.

Post-mortem examination six hours later. Rigor mortis present. Half an ounce of clear serum in the pericardial cavity. A few white clots of blood in the right ventricle of heart. Liver contracted and fatty. Kidneys slightly congested. Mesenteric and retroperitoneal glands enlarged. Mucous membrane of small intestine atrophied. Scars of healed ulcers all along small and large intestines. Depositions of miliary tubercles on the dura mater, covering both the tempero-sphenoidal lobes of the brain, which had also extended slightly to the dura mater, covering the base of the frontal lobes of the brain. The right lateral sinus of the dura mater was entirely occupied by a partially discoloured clot of blood.

Case 6.—In this case the presence of tubercle bacillus in the urine was detected by Professor Castellani on November 8th, 1904, and after forty-nine days' treatment the bacillus was reported absent.

Sinnamma. Malabar estate labourer. Female, aged 12. Admitted November 4th, 1904. Ill one week previously. She had been discharged from the hospital on September 6th, 1904, after being cured of continued fever. Family history good.

Symptoms.—Hair covered with nits. Skin waxy-looking. Sebaceous glands enlarged. Sclerotics tinged yellow. Denudation of epithelium from the ocular conjunctivæ. Constant running from nostrils. Tongue furred, yellow at base, and teeth indented; tip cracked and denuded of epithelium. Throat relaxed. Tonsils enlarged. Chest emaciated. Heart sounds accelerated. Right side of heart dilated. Pulse small, quick, soft. Abdomen retracted. Liver dulness diminished. Spleen normal. Bowels constipated. Legs and feet swollen, especially at the right side; their skin red and tender; complained of much pain in them. Temperature 104° F. Appetite good.

Usual treatment adopted, with the addition of 5 grs. of quinine at bedtime. Usual diet, with the addition of 2 ozs. of arrack daily. Blaud's pills given from the 5th inst. Temperature normal from the 9th inst., so the quinine powders stopped. Swelling in the feet disappeared on the 10th inst. On December 14th, according to Professor Castellani's report, the tubercle bacillus was still present. I then stopped the carbolic mixture, and administered mist. creasoti, 1 oz. twice daily after meals, and on December 21st the absence of the tubercle bacillus was reported, and she was discharged, cured.

Case 7.—This case was admitted to the hospital on November 18th, 1904, and on the 22nd Professor Castellani reported the presence of tubercle bacillus in the urine. On December 29th, after forty days' treatment, he reported the absence of the bacillus.

Menachie. Tamil pauper. Female, aged 10. Ill three months previous to admission. Her mother, three brothers, and two sisters died of diarrhœa, or of symptoms similar to hers. Two years ago she suffered from fever and headache for two weeks.

Symptoms. — Extremely emaciated. Profoundly anæmic. Skin waxy-looking. Sebaceous glands enlarged. Furfuraceous desquamation of the skin. Sclerotics tinged yellow. Denudation of epithelium from the ocular conjunctivæ. Tongue white. Throat and tonsils normal. Heart sounds feeble, right side dilated. Pulse small, quick, soft. Lungs normal. Liver and spleen dulness normal. Bowels constipated. Feet swollen. Appetite good.

Usual diet and treatment were adopted, and she made an uninterrupted recovery.

Case 8.—This case was admitted on November 22nd, 1904, and the presence of tubercle bacillus in the urine was reported by Professor Castellani on the 25th inst., and its absence on January 7th, 1905, after forty days of treatment.

Ponnamma. Malabar estate labourer. Female, aged 27. Married. Ill one month before admission. Complained of general weakness and lower extremities being swollen. Family and previous history good.

Symptoms.—Profound anæmia. Skin waxy. Sebaceous glands enlarged. Sclerotics tinged yellow. Denudation of epithelium from the ocular conjunctivæ. Dried crusts of discharge in nostrils. Tongue coated with betel juice. Throat and tonsils normal. Heart sounds accelerated. Pulse small, quick, soft. Lungs normal. Liver dulness diminished. Spleen normal. Abdomen retracted. Bowels moved twice in twenty-four hours. Motions semi-feculent and fermented. Feet swollen. Appetite precarious. Has not menstruated for the last one and a half years.

Usual diet and treatment adopted, and she made an uninterrupted recovery.

Case 9.—This case was admitted on November 23rd, 1904, and the presence of tubercle bacillus in the urine was reported by Professor Castellani on December 7th, and its absence on January 7th, 1905, after forty days' treatment.

Sinnamma. Malabar estate labourer. Female, aged 30. Married. Complained of fever, dyspnœa on exertion, and swelling of the feet. Previous history good. Youngest child died of anæmia at 5 years of age.

Symptoms.—Anæmic and emaciated. Sebaceous glands enlarged. Sclerotics tinged yellow. Denudation of epithelium from the ocular conjunctivæ. Face puffy. Running from the nostrils. Tongue coated with betel juice. Throat relaxed. Tonsils sound. Lungs sound. Heart sounds accelerated. Pulse small, quick, soft. Suffers from useless dry cough. Liver and spleen normal. Legs and feet swollen. Two semi-feculent motions in twenty-four hours. Has not menstruated for the last six months. Appetite good. Temperature ranged from 101° F. to 99° F. till November 28th, for which quinine sulph. grs. v. were given at 2 p.m. daily.

Usual diet and treatment adopted; she made an uninterrupted recovery.

"Arch. des Sciences Biol.," St. Petersburg, vol. x., No. 5, 1904.

Mixed Infection with Plague Bacilli and Pneumococci.—Goss has ascertained that in mixed culture, on broth or agar, plague bacilli and pneumococci develop readily. In guinea-pigs and rats both organisms grow independently; the pneumococcal infection having a shorter incubation period obscures the subsequent signs and symptoms of plague infection. In mixed cultures the pneumococcus grows the more rapidly and generates acid substances, which at first delays the development of the plague bacillus. In broth faintly alkaline to litmus the pneumococcus retains its virulence for a longer period than in pure culture, due, no doubt, to the alkalinity produced by the plague bacillus. In old cultures, owing to the excess of alkalies, the pneumococci die out. In mixed cultures the plague bacillus does not lose its virulence.

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THE

Journal of Tropical Medicine

APRIL 15, 1905.

BRITISH MEDICAL ASSOCIATION.

Seventy-third Annual Meeting, Leicester, July 24, 25, 26, 27 *and* 28, 1905.

Section M.—TROPICAL DISEASES.

President: RUBERT WM. BOYCE, M.B., F.R.S., Liverpool.

Vice-Presidents: ANDREW DUNCAN, M.D., London; FLEMING MANT SANDWITH, M.D., London.

DEAR SIR,—It is hoped that the Section on Tropical Diseases at the forthcoming meeting of the British Medical Association will be well attended, and that all those interested in this branch of medicine will endeavour to be present and will unite to make the meeting successful, both by taking part in the discussions and by contributing papers.

The following subjects have been selected for discussion:—

Wednesday, July 26.—"Tick Fever."

Thursday, July 27.—"Sprue and Hill Diarrhœa."

Friday, July 28.—"Tropical Diseases of the Skin."

The Section will meet at 10 o'clock on each day.

The following gentlemen have already promised to take part in the discussions or to contribute papers: Dr. H. E. Annett, Professor Rubert Boyce, Dr. Anton Breinl, Mr. James Cantlie, S. R. Christophers, M.B., I.M.S., Dr. Andrew Duncan, Dr. J. E. Dutton, Sir Patrick Manson, Dr. W. T. Prout, Professor Ronald Ross, Dr. L. W. Sambon, Dr. F. M. Sandwith, Dr. J. W. W. Stephens, Dr. Wolferstan Thomas, Dr. T. L. Todd.

We shall be obliged if you will let us know at your earliest convenience if you will be able to take part in any of the above discussions, or if you propose to contribute a paper on some subject.

Papers bearing on the discussion, or otherwise, will be read for gentlemen unable to be in England for the meeting.

The Secretaries will be glad to receive pathological specimens, drawings, photographs, and microscopical preparations for exhibition at the meeting.

We are, dear sir, your obedient servants,

G. A. Clarkson, F.R.C.S.,
11, Southgates, Leicester,

J. M. H. MacLeod, M.D.,
11, Harley Street, London,
Hon. Secs.

"Arch. des Sciences Biol.," St. Petersburg, vol. x., No. 4, 1904.

The Hæmolysins of Plague Toxin.

Bielonovsky states that cultures of plague in ordinary media have a disintegrating effect upon the blood of healthy animals. Filtrates of plague cultures have increasing hæmolytic power up to the fourteenth day, then diminish, but never quite disappear. The plague hæmolysins are markedly resistant in heat; their intensity is in direct ratio to the virulence of the cultures; different strains of plague bacilli yield toxins possessed of different hæmolytic power.

ORNITHODOROS SAVIGNYI, VAR. CÆCUM.

The tick forwarded by Dr. Creighton Wellman from Angola, West Africa, along with his paper upon a case of relapsing fever, with remarks on its occurrence in the Tropics and its relations to "tick fever," which appeared in this Journal of April 1st, 1905, was sent to Professor Ray Lankester for identification.

We are favoured by the subjoined communication concerning the tick through the courtesy of Professor Ray Lankester, to whom we are sincerely indebted.

ORNITHODOROS SAVIGNYI, VAR. *CÆCUS.*

Argas Savignyi, Audouin, Description de l'Egypte, Hist. Nat. i., pl. ix., fig. 5, expl. plates, p. 183, 1826.

Ornithodoros Savignyi, Neumann, Mém. Soc. Zool., France, ix., p. 26, 1896 (ubi synon).

O. Savignyi, var. *cæcus*, Neumann, *op. cit.* xiv., p. 256, 1901.

The specimen examined appears to agree with the descriptions given by Neumann quoted above, and it is identical with specimens in the Museum collection labelled *Ornithodoros moubata* (Murray), a species regarded by Neumann as synonymous with the present. I cannot discover any trace of eyes. Neumann remarks that his var. *cæcus* "paraît bien plus commune que le type, pourvu d'yeux." He records it from Angola and from many other African localities, from Egypt to the Transvaal.

W. T. Calman.

British Museum Natural History Department, April 14th, 1905.

Correspondence.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

Dear Sir,—I have just read Dr. Renner's article in the Journal of Tropical Medicine (December 15th) on "the Prevention of Malignant Disease in the Tropics," in which he asks: "Does cancer occur in natives resident in the Tropics?" I am able to answer this in the affirmative, as regards Assam, but I believe it to be very rare. During my short experience of two years there, I only saw two definite cases of malignant disease, although I had several thousands of coolies under my personal supervision.

The first case was in a Bengalee man about fifty years old, who had an undoubted epithelioma of the lip. When I saw him the disease involved three-quarters of the lower lip, half the lower jaw, and the best part of the floor of the mouth. There were also masses of affected glands in the neck and supraclavicular region. He was hardly able to open his mouth, and could only take liquid food. He died a month after I saw him, operation, of course, having been impossible.

The second case was that of a Central Province coolie woman who came to me suffering from epithelioma of the gum, involving the lower jaw and cervical glands. Any form of operation was refused. The disease soon involved the whole mouth, and I heard she died shortly afterwards.

I may mention that both these patients lived entirely on rice and native vegetables, with an occasional chicken.

On enquiring of other medical men in Assam, I heard of a very few cases of malignant disease amongst coolies, all of which were of the head (tongue, lips, and jaw).

A. Halliday Pollock, M.R.C.S., L.R.C.P. (Eng.).

Kurseong, D. H. Ry., India, March 2nd, 1905.

Translation.

ON FILARIA PERSTANS IN THE BUKOTA DISTRICT.

By Surgeon-Major Dr. Feldman.

(*Translated by Dr. T. S. Kerr.*)

Official Report.

In my first report on *F. perstans* I conjectured that bananas and banana juice played an intermediary rôle in the passage of *F. perstans* from blood-sucking insects to man.

On this hypothesis I carried out systematic blood examinations, which showed that the frequency of occurrence of *F. perstans* is proportional to the presence and growth of bananas. In Ostmpororo, only the natives of the Sultanates of Katreia and Vyawingi, where there are no bananas, were free from *F. perstans*.

Further prosecutions of my researches confirm this conjecture.

The intermediary of *F. perstans* is a tick (belonging to the *Arachnidæ*, Order *Acarina*, Family *Ixodida*, Genus *Argas*), which infests the huts of those dwelling in the banana plantations in great numbers.

During the day those light-shunning insects hide in the straw and reeds of the huts, in holes, in wood and in the hay-covered floors, only coming out occasionally, attracted by the warmth of the fire.

At night they attack man and suck his blood. After sucking they release their hold and at dawn again seek their hiding places.

The ticks are of a yellow-brown or dirty grey-brown colour, they have a tolerably hard outer case, broader posteriorly and indented at the edges. The outer case, both in furrows and ridges, shows regular markings which, under the microscope, are seen to consist of small greyish white points. On the under surface of the thorax are the two mandibles provided with hooks, and between them a powerful biting proboscis.

They have no eyes.

The powerful four-paired legs are provided at their extremities with two-hooked claws.

The pregnant female, full of blood, measures about 15 mm. long and 11 mm. broad. The male is considerably smaller.

These ticks are parasitic almost exclusively to man and only occasionally visit animals.

They constitute a positive plague and occasionally induce even the indolent natives to burn down and rebuild their huts.

They are chiefly to be found in Kimoani and Ihangiro, where, as already mentioned, the majority of the natives are infected with *F. perstans*.

The ticks suck up with the blood of natives infected with *F. perstans* the embryos of those filariæ which then pass into the stomach.

From the stomach the embryos migrate into the thoracic muscles of the tick, and after wandering about in their early stages in their host finally arrive in the ovary, where they develop into a long worm.

These worms, which are the larval forms of the adult, are deposited with the eggs of the tick in slightly decayed, ripe, broken bananas.

The result of my research on this subject may be summed up thus:—

I.—Ticks which had sucked the blood of natives infected with *F. perstans* were for twenty-five days thereafter examined daily for the presence of larval forms of *F. perstans*.

An hour after sucking, embryos of *F. perstans* were present in the proboscis and stomach of the ticks.

About the sixth day small worms appeared in the thoracic muscles, which in the succeeding days grew larger.

On the tenth day they appear as bright, shining, faintly granular tubes, about 2 mm. long. Gradually the head end thickens and the commencement of an alimentary canal is faintly recognisable.

About the fourteenth day is seen a worm possessing a bright, shining, faintly granular outline, an inner fuchsin-staining muscular layer, the commencement of a digestive system, and a further differentiation of the head end.

During the next few days, though the growth of the worm is slow, there is rapid development of the digestive system and differentiation of the head end.

About the twentieth day the worm is complete, possessing a distinct covering, a digestive tract, an inner layer, and provided at its conical rounded and thickened head end with a circular mouth.

At this stage of development the filariæ migrate from the thoracic muscles to the ovary of the tick.

A tongue next appears in the head end of the worm.

After the twenty-second day the worm lengthens greatly, in quite a short time increasing from four to five times its own length.

At this stage of development there is a thickened head end with a rounded mouth and protractile tongue, representing a boring apparatus; a digestive tract, extending from the mouth to the cloaca in front of the tail end, and a double-lobed tail.

On attaining this stage of development the larval form of *F. perstans* in the tick is complete.

II.—In slightly decayed ripe bananas taken from the huts of natives I found a mass of tick eggs, and amongst them recognised the large larval form of *F. perstans* already described.

The same result was obtained by microscopical examination of the centrifuged sediment of fresh banana juice obtained by squeezing up the slightly decayed bananas with added water, which constitutes the usual drink of the country.

An opportunity of depositing their eggs in bananas is afforded to ticks, as it is the custom for natives to hang the unripe plucked banana bunches in their huts until ripe.

III.—Ticks which had sucked the blood of natives infected with *F. perstans* were afforded the opportunity of depositing their eggs in ripe entire bananas, but search in these for tick eggs and larval forms of the *F. perstans* proved negative. The parts of the banana skins on which tick eggs were found deposited I have investigated in smear preparations for tick eggs and larval forms of *F. perstans*. The research gave positive results. My research already described gives shortly the following results:—

Embryos of *F. perstans* are conveyed with human blood into the species of tick described and develop in these ticks into the larval form of the adult.

These larval forms are deposited by the tick with her eggs in decayed ripe bananas with broken skins and are carried with bananas or banana juice into the alimentary tract of man.

After wandering about the intestine they probably bore their way through and find their way into the tissues of the abdominal cavity, where they develop into the adult form.

Remarks by Dr. T. S. Kerr.

The official report of Dr. Feldman, Surgeon-Major to the Imperial forces in German East Africa, on *F. perstans* in the Province of Bukota, in the February number of the *Archiv. für Schiff-und Tropen-Hygiene*, a translation of which appears in the current number of this journal, is a serious contribution to the literature of this important subject.

In a former paper (the July number for 1904 of the same journal) Dr. Feldman, after an elaborate research on some 6,000 natives in various provinces of the district, a study of the minute anatomy of both embryos and parental forms of *F. perstans*, of the physical features prevailing in these districts, comes to the conclusion that the occurrence of *F. perstans* is in some way connected with and proportional to banana cultivation, an opinion, by the way, already expressed by Christy.

He gives a table, showing in nine districts the nnmber of natives examined in each of these districts, and the percentage infected with *F. perstans*.

In eight of these districts banana cultivation is carried on and a large proportion of the inhabitants are infected with *F. perstans*. In the ninth district, M'pororo, comprising the three Sultanates of Kisselewombo, Katreia and Myawingi, 300 natives were examined; in the two latter, where there are no bananas, 200 were examined, none of whom were infected with *F. perstans*; in the former, where bananas are but sparingly cultivated, other conditions being the same, the numbers infected were proportionately few.

This table is adduced in proof of his contention.

Dr. Feldman, after further prosecution of his researches, now asserts in his later paper that the intermediary of *F. perstans* is a tick, and that during a developmental stage in their passage through the tick's body these larval forms of *F. perstans* find their way into the ovary and are deposited with the ova in broken, decaying ripe bananas.

The usual drink of the natives being made from these decaying ripe bananas, an opportunity is afforded the larval form of *F. perstans* of readily gaining access to the alimentary canal of their human host, whence they bore their way into his tissues.

He describes the developmental changes of the embryo in its passage through the tick and how he found the larval forms lying together with tick eggs in broken, decaying ripe bananas.

Suggestive as Dr. Feldman's paper is, there are, perhaps, one or two points which seem to us to require elucidation before it can be accepted as proving what he claims for it.

In Dr. Feldman's paper it is nowhere stated what measures he adopted to ascertain if the ticks in which he subsequently found larval forms were uninfected before feeding on beings infected with *F. perstans*.

It would, further, be interesting to know if (1) the ticks which were subsequently dissected after feeding on infected natives were specially selected ticks reared from the egg or simply ticks known to have fed on those infected with *F. perstans*. (2) If the eggs with the small worms found lying amongst them were ascertained to have been deposited by selected ticks. (3) Whether any control experiments were made with ticks that had sucked the blood of those uninfected with *F. perstans*, and their results.

In view of the theory put forward, how account for: (1) The prevalence of *F. perstans* (about 70 per cent.) amongst Indians living in forest in the back country of British Guiana, where bananas are not cultivated. (2) Its complete absence in many of the West Indian Islands, where the banana is extensively cultivated; also in the Malay Archipelago, the Pacific Islands and the basin of the Zambesi.

These are difficulties that occur to us without denying the accuracy of Dr. Feldman's observations, and before accepting them we should like to have these difficulties explained.

The illustrations accompanying his paper are somewhat crude, and without absolutely dissenting from Dr. Feldman's views, we confess we should have liked to have seen the evidence in greater detail and more elaborately and carefully illustrated.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the Journal of Tropical Medicine *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Indian Medical Gazette," March, 1905.

1. Some Points Connected with Liver Abscess as Seen in Calcutta. By J. W. D. Megaw, Captain I.M.S.
2. Vaccine Lymphs in the Punjab. By W. F. Harvey, Captain I.M.S.
3. The Nature and Prophylaxis of the Fevers in the Dinajpur District. By Leonard Rogers, Captain I.M.S.
4. An Outbreak of True Beri-beri among the Students at Tura, Garo Hills, Assam. By the Rev. G. C. Crozier, M.D.
5. Myxœdema in India. Letter. H. Hamilton, Colonel I.M.S.
6. Thirteen Cases of Cholera Treated with Oil Eucalyptus. Letter. H. Banerji.

(1) Megaw reviews the cases of liver abscess which have been treated in the Medical College Hospital, Calcutta, from the year 1895 until the commencement of 1905. Of the 292 cases dealt with during that period nearly 50 per cent. died, in spite of the

promptest surgical treatment; or, including the probable deaths amongst some of the thirty-four patients who left the hospital at their request, the mortality may be stated to be almost 60 per cent.

Of 224 records a history of dysentery was found in 150 only, so that the clinical evidence of the influence of dysentery is not very convincing. If, however, the clinical and *post-mortem* records are taken together, there is evidence of dysentery in almost 90 per cent. of the cases. Of sixty-four consecutive *post-mortem* examinations of cases of dysentery, in seven definite early liver abscess were met with, while in many others the liver appeared in the early stages of "fatty" or "cirrhotic" degeneration, and in only a few could the liver be said to be healthy.

The proportion of liver abscesses amongst the natives of Bengal is large compared with the almost complete immunity enjoyed by the Sepoys (native soldiers), the difference being in all probability due to the temperate habits of the Sepoys both in food and drink. According to Capt. Megaw, alcohol would seem to be a markedly determining factor in the etiology of liver abscess, a history of spirit drinking in some form being ascertained in 70 per cent. of the cases. *Age:* Statistics show that liver abscess is a disease of early manhood; it is rare in youth and old age, and not seen in childhood. *Sex:* Of 278 cases only ten were females (seven Hindus, two Europeans, one Mahomedan). Malaria does not seem to play a special part in causing liver abscess.

The situation of the pus, according to fifty available *post-mortem* records, was as follows:—

Single large abscesses (right lobe) ...	20
Single large abscesses with one or more smaller	7
Single large abscesses with numerous small	11
Multiple fairly large abscesses	3
Numerous small abscesses	3
Perihepatic single abscesses	4
Perihepatic abscesses with secondary smaller	2

The abscess had burst into:—

(*a*) The right pleura	in	3 cases.
(*b*) The right lung	,,	2 ,,
(*c*) The peritoneum	,,	2 ,,
(*d*) The inferior vena cava ...	,,	1 case

In six cases there were secondary abscesses in the right lung without any visible communication with the abscess cavity in the liver.

(2) Harvey, in his report to the Sanitary Commissioner of the Punjab, advocates the advantages to be derived from the use of glycerinated lymph in comparison with vaselinated vaccine lymph.

The glycerinated lymph was subjected to treatment by chloroform with excellent results. The method is as follows: The lymph pulp is ground up and mixed with sterile water. Chloroform vapour is then passed through the mixture at a uniform rate for three to six hours, when it is stopped and filtered air is passed through in order to displace the chloroform. All extraneous organisms will be found thereby to be destroyed, but spore-bearing forms remain and micrococci are sometimes left alive; nevertheless, the treatment by chloroform is a great saving in time, and corresponds to the good effected by glycerine in a month. Harvey summarises the results of his experience as follows:—

GLYCERINATED LYMPH.

(*a*) Prolonged contact with glycerine results in destruction of vaccine virus, but means can be taken to minimise this action by regulation of temperature.

(*b*) Contains when ready for issue few or no extraneous micro-organisms and those which are present are restrained from multiplying.

(*c*) Gives uniform results owing to thorough admixture.

(*d*) Can be subjected to the chloroform process, and so become available for use at any period after preparation.

(*e*) Little or no liability to produce inflammation (so-called "strong lymph").

(*f*) Duration of activity at a low temperature not less than three months in the case of a good quality lymph.

(*g*) Liability to deteriorate from the effect of heat, less than "pure" undiluted lymph.

VASELINATED LYMPH.

If lymph contained *no* extraneous organisms, prolonged contact with vaseline might be presumed to be without danger of destruction to the vaccine virus when kept at a low temperature.

Contains innumerable extraneous organisms when issued, and these are in no way restrained from multiplying.

Liable to give unequal results owing to difficulty of admixture.

Cannot be subjected to the chloroform process.

Liable to give rise to inflammation and ulceration.

No superiority in duration of activity.

Liability to deteriorate from the effect of heat less than "pure" undiluted lymph, but greater than glycerinated lymph.

RECOMMENDATIONS.

Harvey recommends—

(*a*) That glycerinated lymph should be substituted for vaselinated lymph in the Punjab.

(*b*) That the glycerinated lymph should first be treated with chloroform.

(*c*) That a central lymph depôt should be established in Lahore, from which lymph could be supplied to the districts of the Punjab.

(*d*) That all vaccinators should undergo a course of training at the Central Depôt.

(3) Rogers, in Part II. of a report upon this subject, states that of the kinds of malaria met with in the Dinajpur district malignant tertian was by far the most common; one case of benign tertian was noticed, and quartan parasites were also met with. During the enquiry, Rogers, in thirty cases of fever with splenic enlargement, performed spleen puncture and found in one-third of the cases the Leishman-Donovan body; but in no less than half the cases examined neither malarial parasites nor the new bodies could be

found even by splenic puncture. Clinically, it is impossible at present to differentiate between the symptoms presented by patients suffering from the Leishman-Donovan bodies and those infected by malaria, in which the malignant tertian parasites are met with. In kala-azar Bentley proved the presence of the Leishman-Donovan bodies, and as this disease is undistinguishable from malarial cachexia it is reasonable to conclude that similar infections obtain in the several forms. The *Anopheles* mosquitoes found in the houses in Dinajpur town were in the following proportions: *A. fuliginosus*, 178; *A. rossii*, 39; *A. listoni*, 6; *A. barbirostris*, 3; *A. sinensis*, 2. Mosquito destruction by improving the drains and removing stagnant water, &c., will no doubt check malaria in towns, but in the rural districts some other form of mosquito destruction must be relied upon. This can only be done by efficient doses of quinine.

(4) Dr. Crozier describes an outbreak of beri-beri at Tura, in Assam. It would appear that persons dwelling in the neighbourhood of the institution from which he writes suffered from a disease closely resembling the ailment the native students were attacked by. A description of eighteen cases is given, and while some appeared scarcely typical forms of the complaint, the majority afforded examples of signs and symptoms indistinguishable from beri-beri. The outbreak was first noticed in May, 1904.

(5) Hamilton saw a case of myxœdema at Meerut in 1895. The man recovered after being given half a thyroid gland of a sheep or goat daily for a month.

(6) Banerji administered in thirteen cases of cholera the oil of eucalyptus with mucilage and syrup, with dilute hydrocyanic acid and subnitrate of bismuth. The treatment seemed to answer well.

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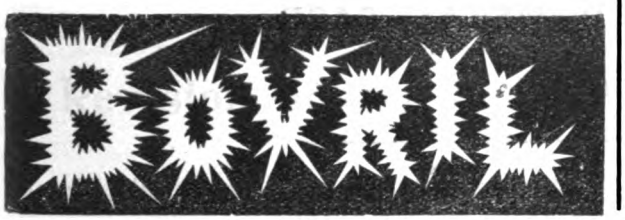
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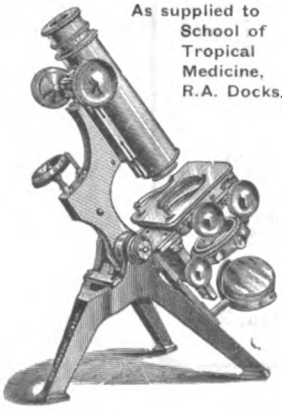
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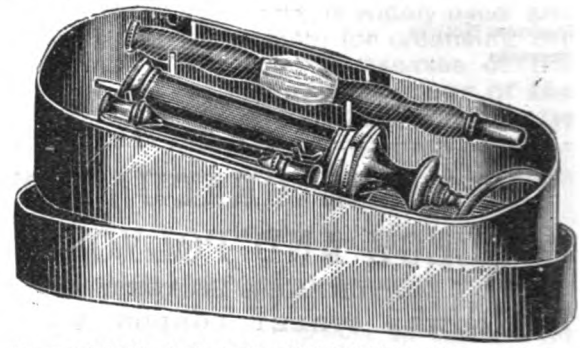
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IN HONG KONG.

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This treatise was prepared by the author, as stated in the introduction, for delivery to the students of the University:—"To enlighten and warn the young students against certain dangers and temptations connected with sexual life which they encounter here in the capital . . . who came straight from the provinces, set sail with but a slender ballast of knowledge respecting the conditions into which [they] were thrown . . .

"If these matters have to be treated in a general way it will be necessary to speak quite plainly about them, to call them by their proper names—in short, to say plainly what has to be said without paraphrases or hints. The title itself of these lectures indicates that I aim at full openness. I might have called them, for instance, 'A Chapter in Private and Public Hygiene,' or something similar; but I have preferred from the outset to speak about these diseases as I would speak about any other disease, and, in my opinion, this can be done without giving offence of any kind. Even if difficulties should present themselves, I believe these will be fewer and easier to surmount before an audience of students than in most other places."

The publishers believe this treatise, written as it is by a man of such eminence in this particular department of medicine, will be found of great benefit to the general public, and have therefore had a most careful translation prepared, and feel every confidence that if the advice given be followed much suffering, mental and physical, will be avoided, and that young and inexperienced men will be prevented from falling into the clutches of quacks and impostors, who use every art to work upon the ignorance and fears of their innocent victims.

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THE INCIDENCE OF DISEASE IN HONG KONG.

By William Hunter, M.B., C.M.Aberd.
Government Bacteriologist, Hong Kong.

The spread of disease over the surface of the earth is, curiously enough, a science of recent origin. In fact, it may be regarded as yet in its infancy.

However, looking at the question broadly, one is at once compelled to admit that this question is one of enormous magnitude and importance as regards geographical pathology.

Indeed, it would seem a wonder why medical England so slowly awakened to her splendid position of possessing the ways and means of establishing for her great colonial empire a knowledge of the diseases met with in various British climes and countries, and of the best means of dealing with them.

The credit of awakening Britain to her responsible position in leading the van as regards colonial hygiene belongs to malaria. The diffusion of this disease, its terrible scourges, &c., may be said to have given the first impetus towards the study of the incidence and methods of prevention of tropical disease. It was with the hopes of removing from mankind one of the worst disease scourges that British workers took up the study of tropical disease, and the results thereof are fully confirmed by the brilliant researches of Manson, Ross and others, whose work has not only met with practical recognition in Britain, but also in other European countries.

The monumental work of Hirsch on geographical and historical pathology was probably the first successful attempt to raise the study of this branch of medicine to a science. Since then, apart from a succession of articles in various tropical publications, practically nothing has been attempted to bring the study of this science on a level with other medical sciences.

At the same time, much useful information has been obtained from the writings of Davidson, Manson and others.

A recent book, and one which follows closely in the steps of that of Hirsch, is that published by Clemow. Here one finds, in chapter after chapter, prominence given to the main facts of the geographical distribution of each disease, and statements are forthcoming as to the factors possible in the determination of that distribution.

The subject of the incidence of disease in Hong Kong has, since I arrived in the Colony, been one of extreme interest to me. I considered it of importance to note the absence as well as the prevalence of disease in a country far removed from Europe. My reason for entering upon the study of such an interesting question rests upon the fact that the incidence of disease in any particular spot of the earth's surface must throw a considerable amount of light upon some important questions in pathology.

Permanency as regards the geographical distribution of disease cannot be final. Many diseases have, so far, not reached their limits of diffusion. It would appear that, with the inroads made by civilisation, diseases, at one time confined to certain areas of the globe, are spread broadcast over the surface of the earth. The diffusion of small-pox, cholera, plague, &c., has only to be mentioned in order to emphasise this distribution of disease through the establishment of close international commercial enterprise.

Latitudinal Geographical Distribution.

Apart from the incidence of exotic disease, *e.g.*, cholera, disease would appear to have a latitudinal geographical distribution. Certain diseases are found chiefly in cool climates, others are more or less confined to the Tropics. In this respect one has only to note the incidence of different diseases in Shanghai and in Hong Kong. In the former settlement, which is out of tropical influences, the diseases prevalent are, on the whole, similar to those found in Europe.

Plague in Hong Kong.

Of all diseases prevalent in Hong Kong, *exotic plague* is that which causes most anxiety. Its outbreak in 1894 marked an epoch in the history of the disease. From Canton and the surrounding provinces—the endemic centres of the outbreak—plague has spread almost over the entire globe. Year by year Hong Kong has its epidemic of plague. It is sometimes mild, sometimes severe, but its annual recurrence is undoubted and has gradually become an expected event in the lives of Hong Kong residents. A remedy for the effectual eradication of the disease would not appear to be to hand. Indeed, it is not too rash a statement to say that it is extremely doubtful if, with our present knowledge of hygiene, we can materially influence the recurrence of plague in its endemic home. I doubt if we have yet got into touch with the methods of successfully dealing with the real root of the evil. A natural question to ask in regard to these endemic centres of plague is, will not the exotic, in defiance of the efforts of the sanitarian at immediate eradication, eventually disappear more or less suddenly and for no apparent reason? Plague epidemics in the past have suddenly disappeared from endemic centres, *e.g.*, Egypt, and Europe in the seventeenth century. How can we account for this? At the time there was no great effort made in either of these places to improve sanitation.

Cholera.

Another exotic disease which threatens the inhabitants of Hong Kong is *cholera*. According to Manson, cholera is endemic in Canton. Hence a good reason for dreading the introduction of the disease in epidemic form into the Colony. One point which, to a certain extent, insures us against the widespread prevalence of this disease in Hong Kong is that cholera is essentially a water-borne disease. It is rare for the Chinese to drink water. They prefer tea as a quencher of thirst. If water is used, it is usually boiled along with other articles of diet. This custom must be held largely responsible for the prevention of cholera in its typical manifestations amongst the residents of the Colony. Furthermore, the water supply of the city of Victoria is above suspicion.

Malaria.

The past history of Hong Kong has clearly shown it to possess excellent breeding ground for the malarial mosquito. History records Hong Kong as notorious for the prevalence of *malaria*. The configuration of the island is such as favours this condition of affairs. Ravines, shallows, &c., with pools and streamlets, abound, and there the Anopheles has every encouragement to breed prolifically. If Hong Kong had a black record in the past, it has every reason to congratulate itself at the present time. During the past decade fever of the malarial type is, to say the least, rare in the city of Victoria. It is the exception rather than the rule to hear of Europeans contracting the disease. It is true, some parts of the Colony are still malarial, and residents, *e.g.*, the police, in such districts contract the disease. In general, however, the city of Victoria must be regarded as extremely healthy from a malarial point of view. This satisfactory condition of affairs, as regards malaria, is due, in the main, to the successful efforts of the Government in training scientifically the main "nullahs" in and around the outskirts of the city.

Beri-beri.

Beri-beri may also be included as a disease common amongst the Chinese population of Hong Kong. Its incidence, however, is subject to considerable variation. Small outbreaks of epidemic beri-beri occur from time to time, and the death-rate from the disease averages between 300 and 400 per annum. There is no strong proof that the disease is endemic either in Hong Kong or in China as a whole. The disease would appear to be constantly imported from two principal centres of this disorder in the East, namely, the Malay peninsula and neighbouring archipelago, and Japan. In Hong Kong the type of the disease is chronic and benign. Acute pernicious cases of the disease, such as found in endemic centres, *e.g.*, Singapore, are rarely met with.

Dengue.

During the past year or two more or less severe epidemics of *dengue* have been prevalent in Hong Kong. In 1902 the disease was severe, almost all the Europeans contracting the infection. In 1903 and in 1904 there have been slight outbursts of the disease, but the number of persons attacked was small. Dengue fever in its epidemic spread resembles influenza. Its extensions are marked by a great irregularity. From all accounts the disease has so far been limited to the tropical belt, with extensions for a few degrees on either side of this latitude. Again, epidemics of dengue are usually found prevalent during the hotter seasons of the year.

Small-pox.

Small-pox recurs annually in Hong Kong. It makes its appearance during the colder seasons of the year. Its incidence is small amongst the resident population. This disease is one of the commonest in China, especially in the northern parts of the country. In Hong Kong, however, excluding the large number of imported cases, the disease scarcely ever assumes serious proportions.

Typhoid.

The incidence of *typhoid fever* amongst the Chinese population of Hong Kong is difficult to estimate. Europeans frequently suffer from the disease. With the Chinese, however, the information regarding the disease is meagre. Typhoid is a disease of insidious onset. The Chinese residents of Hong Kong, should they feel sick, quickly leave the Colony "for their country." Thus it becomes a matter of extreme difficulty to obtain accurate results in regard to the prevalence of enteric fever amongst the natives. We have no records of any value in the Chinese hospitals in Hong Kong. Again, the natives rarely enter a hospital but "to die." *Post-mortem* examination of hospital cases is avoided as much as possible in deference to the religious feelings of the people.

At the public mortuary, however, excellent opportunities of studying the incidence of disease are obtained. During the past year a number of cases of typhoid fever have been found by *post-mortem* examination. A detailed account of the results obtained is published in the Annual Report of the Government Bacteriologist of Hong Kong for 1904. It shows that enteric fever is by no means a rare disease amongst the Chinese. It occurs as frequently in adults as in children, and further, the theory of acquired immunity from typhoid in childhood is not supported by the evidence obtained by actual *post-mortem* examination.

Tubercle.

The Chinese would appear to be extremely susceptible to *tubercular diseases*. Throughout Hong Kong tuberculosis, in its various manifestations, is rampant. Tubercular meningitis is rare, but acute generalised tuberculosis in young children, and phthisis in young adults and the wage-earning population, are widespread, and contribute largely towards the annual mortality. Again, the course of tubercular infections amongst the natives is much more acute than that found in Europeans. At the public mortuary, where over 2,000 autopsies are held annually, types of tubercular disease are found which, in their severity and distribution throughout the body, exceed even the most pronounced cases of the disease met with in Europe.

Venereal Diseases.

The ravages caused in China through *venereal diseases* are very apparent in Hong Kong. In China no efforts are made to control these diseases, and they become a terrible scourge to all classes of the population. Indeed, for certain districts the term "generalised syphilisation" would be correct. *Post-mortem* evidence of syphilis is quite common, and gummata and various aneurisms are occasionally found.

Diarrhœa and Dysentery.

Diarrhœal disorders are extremely common in Hong-Kong. In infants and children diarrhœa accounts for a considerable annual death-rate. In adults, native or European, this symptom of so many affections is prevalent and frequently a very disturbing factor in the life of the Hong Kong resident. Amongst the Chinese

disorders of this nature abound, and are due to ordinary causes, *e.g.*, ignorance, improper feeding, unhygienic surroundings, and the like. One may truly say, after a study of the Eastern native, that the determination of the incidence of this class of disease depends upon the geographical distribution of education in the factors productive of normal physiological processes of health. *Dysentery* is also common in Hong Kong. It prevails mostly in chronic form and does not figure largely as a direct cause of death. I cannot agree with Clemow, who states that it is one of the commonest diseases under treatment at the Government Civil Hospital in Hong Kong. Cases are frequently recorded, but not in excess of other common diseases.

Respiratory Disorders.

Respiratory diseases account for 20 to 30 per cent. of the total Chinese deaths in Hong Kong. Bronchitic affections are widespread, and catarrhal and croupous pneumonia are frequently found to be the causes of death in children and adults. Amongst Europeans pneumonia is not common. Influenza is met with as at home. Complications and sequelæ would appear to be less common.

Cases of *liver abscess* are met with. Its incidence is far below that of Cochin China, where the disease accounts for nearly 4 per cent. of the mortality from all causes. In Hong Kong it is about as frequent in natives as in Europeans.

On the mainland and in Canton *leprosy* abounds, but little of the disease is seen actually in Hong Kong. The neighbouring provinces of Kwang-tung and Fokien are described as the cradle of the disease in China.

Blackwater fever is never seen in Hong Kong.

Typhus fever must be regarded as extremely rare in the Colony. It exists, however, in the neighbouring Chinese provinces.

Stone is said to be common in China. Few cases, however, reach the hospitals in Hong Kong. *Biliary calculi* are also rare.

Cerebro-spinal fever is only occasionally met with, and *measles*, *scarlet fever* and *chicken-pox* are scarcely ever in evidence, unless imported. In more northern latitudes, however, *e.g.*, in Shanghai, such diseases prevail as in Europe.

Diphtheria accounts for very few cases per annum. It is usually imported from some neighbouring seaport.

Whooping cough occurs, but the disease is milder in type than in Europe.

Rickets is one of the rarest diseases in Hong Kong. Most Chinese babies are breast fed. They live amongst filth, and many children rarely breathe pure air. The staple food of the native is rice, with bits of fish and meat, and the children as well as the adult look upon their meal hours as the events of the day. Unhygienic surroundings would not appear to be of such importance as deficient and improper food in the production of this condition.

Acute articular rheumatism is very rare in Hong Kong. Varieties of chronic rheumatism are amongst the Chinaman's greatest afflictions.

Amongst the Chinese in Hong Kong *atheroma* is general. It would appear to begin early in life. Almost every Chinese cadaver over twenty to twenty-five years of age shows marked atheroma and arteriosclerosis.

The foregoing details are simply the records of my experience of the incidence of disease in Hong Kong. It is by no means complete. Medical diseases only have been considered. The facts pertaining to the incidence of surgical and skin diseases, &c., can well be left for consideration in a separate contribution.

Again, such an account of the prevalence of different diseases in Hong Kong can have no finality. At the present day there can exist no classification of disease on a geographical basis.

I trust, however, that in the foregoing account of our diseases in Hong Kong I have given a fair representation of the incidence of these diseases and the facts bearing upon their pathology.

SPIRILLA FEVER IN SOUTH CHINA.

Short Notes of a Case.

By Leopold Hill, M.R.C.S.
Late of C.M.S. Hospital, Pakhoi.

To the two or three contributions to the Journal recently of cases of relapsing or spirilla fever I would like to add a short note of a case occurring in South China (Pakhoi). In the routine examination of the blood of many hundred fever patients there I have only twice found *Spirillum Obermeieri*. The first was recorded in the Journal[1] some time ago. The following are the notes of the second. I have not come across the notes of others having observed this disease in South China, and it would be of great interest to all readers of the Journal if others would give their experience of this fever and so help to elucidate its cause.

Case Record.

Chinese coolie, aged 33. Has been in the employ of and lived in the compound of a European for several years, in the coolie quarters. Date of admission into hospital, March 7th, 1904.

History.—Had been ill with "fever" and unable to do his work for several days; quinine had been given, with no benefit.

Condition on Admission.—Patient very weak, thin and sallow. Complained of pain in left shoulder. Temperature, 101° F. Examination of blood showed an excess of leucocytes, but no malarial parasites; myriads of spirilla in every field.

Progress.—Temperature same night, 5.30 p.m., was 103·6°. March 8th, 102·6° a.m. and 102·8° p.m. Spirilla immediately detected, but not so numerous as on previous day, the blood flow from the finger-prick very scanty. Since admission given quinine gr. iv. bis die, and phenacetin gr. vi. On March 9th the morning temperature was 99·8, and no spirilla were found on carefully examining blood. The patient is extremely feeble and jaundiced; was given digitalis and strychnine. On March 10th the temperature was subnormal, no spirilla, leucocytes greatly diminished and rare. The

[1] Journal of Tropical Medicine, February 1st, 1904.

tongue is cleaner and jaundice less. March 11th, no fever, no spirilla, blood flows easily on pricking finger. There was no further rise of temperature and no further discovery of spirilla, and the patient gained strength daily, and was discharged on March 25th.

These are the notes taken at the time when I was in China last year. Although the quinine was continued when the patient came to the hospital, I think phenacetin in this case (as in the former) did more to destroy the spirilla than anything else, and possibly brought them to the peripheral blood, making it easier to detect them after giving this drug than before. The blood should be examined immediately it is drawn, and those to be stained should be forthwith done.

NOTE ON A FORM OF MALARIAL PARASITE FOUND IN AND AROUND JERUSALEM.

By J. Cropper, M.A., M.D., B.C.,
Rumullah, Palestine.

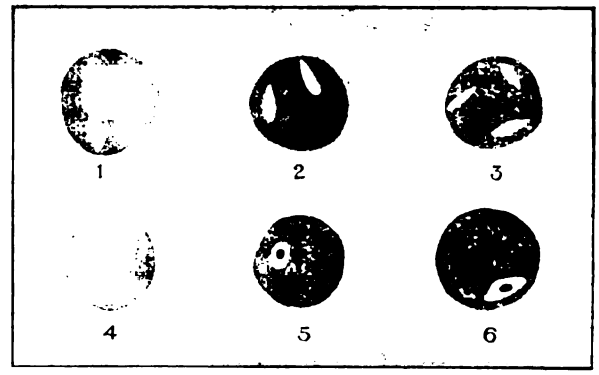
Shortly after beginning work on the malarial fevers of this district, I found that certain cases of remittent fever, and indeed the great majority of such, presented on microscopic examination of fresh films numerous parasites, which I could not reconcile with any of the figures in the books at my command, nor could I find in any but a small minority of these—*i.e.*, 10 per cent.—the "pale rings" so commonly drawn and so easily stained.

These pale rings frequently were associated with "crescents," and in three cases I was able to find the sporulating form (*i.e.*, in 1 per cent.), of which I have stained slides (*i.e.*, of peripheral blood).

Incidence, &c.—For the most part this form occurs in children, who frequently have enlarged spleens—30 per cent. at 5 years or under. They had been ill often for months with fever, generally of a quotidian type, more rarely tertian in character. Indeed, so rarely was there a tertian history that I can readily believe that all were cases of double infection, as happened in two cases, in which the tertian parasite also was found.

Pale Rings, where Found.—The cases of fever with "pale rings" come chiefly from the Jordan valley—a fever often of a very severe type; but I am convinced that we have to do with a *separate and distinct type of infection*, and this is of the greater importance, since several observers now incline to the belief that there is only one species of malignant parasite.

Minute Anatomy.—In fresh films, carefully prepared, perhaps the earliest form in which the parasite is seen is as a minute, rounded, rather refractile body near the periphery of the red cell, but the form which mostly engages attention is of an oval or short rod shape, which, when seen in a corpuscle with central vacuole forms something like the handle of a ping-pong racquet, the blade of the latter being the vacuole (fig. 1). Often, too, it appears as a pale, elliptical, or rod-shaped body lying parallel to the periphery or at a tangent (fig. 2) to the same. It may also be more or less bent or comma shaped, and (figs. 3 and 4) multiple infection is common in bad cases, and, generally speaking, the number of parasites very fairly corresponds with the gravity and duration of the disease; there being as many as fourteen or more in a field (in some cases) where the fever has been going on for months, and the spleen is notably enlarged.



In no case is the parasite seen to be affixed or stuck on to the cell, as often happens in pale rings of the tropical form.

Above all, it can easily be distinguished from any kind of vacuoles due to drying of the films (which should, of course, never be seen in a well-mounted slide properly ringed with vaseline even after some days).

Larger Forms.—As a rule, the above have no central body, but in about 12 cases I have been able to make out, in what is evidently an older form, a central dot, not pigment. Amongst these movement is comparatively common, and this movement has been watched for hours, in one case for twenty-seven hours, at intervals (fig. 5).

These older forms are of the shape of a melon seed, but flat in cross section: this appearing plainly when the movement takes the form of *rotation on its long axis* (fig. 6).

In size this form varies from $\frac{1}{4}$ to $\frac{1}{2}$ of the diameter of a red cell.

Movement.—This is very characteristic, and totally different from the amœboid, slow-flowing motion seen in cases of pale rings. The amœba does not alter its shape to any appreciable extent, but at most has a slight oscillatory character, the chief point being the alteration of the direction of its axis and of its position in the cell, which takes place fairly quickly and to a considerable extent.

After some hours this movement generally ceases. When doubly infected this movement is very easily made out.

One has, of course, to avoid mistaking the movement of a motile bacillus lying on a corpuscle for the above, in a dirty slide; but this is easy.

Pigment.—In the later stages two or three small grains of pigment may (but rarely) be observed.

Crescents I have found in 2 or 3 cases only in this infection. I have examined the blood of the spleen in only one instance. In it I have found no pigmented bodies of any kind.

In some cases marked poikilocytosis occurs, but not generally.

In about 12 cases I have found this parasite in persons who complained of little or no fever, but whom I suspected of malarial poisoning, with perhaps headache, anæmia and sallowness. Without exception these have greatly improved under quinine. As a rule the number of parasites in these was very small and they were only found after long search.

In the only case with pernicious symptoms of the tetanic type described by Marchiafava and Bignami I found six or seven of these forms five days before death. Other cases, of a comatose or bilious remittent type, have all recovered.

So far I have been unable to stain dried films, though all the other forms of the malarial parasite have stained exceedingly well by Leishman's method; the larger forms can sometimes be made out faintly. Of all forms of malaria this is most refractory to quinine, though it yields in the end. The parasite, too, corresponds with this, and can be seen days after quinine has been given in adequate doses (15 to 30 grains daily). Some of my cases have been examined at intervals of several weeks and months, a few much oftener.

As mentioned elsewhere, this form is found chiefly in the hill districts, and I believe that persons immune to it readily fall a prey to the tropical form with pale rings. Workers on the new Haifa to Damascus railway from this village frequently come back in wretched health from the Jordan valley, and with crescentic infection.

Lastly, the figures sent herewith have all been drawn from fresh or stained slides during the last six months, and not from book illustrations. The majority of the patients were very ill, and had enlarged spleens of various degrees.

N.B.—The form of parasite above described has occurred in 192 cases out of a total of 300 positive examinations; sometimes as a mixed infection, but generally alone. The youngest patient was 2½ months, and 68 were in children under five.

Anopheles maculipennis is to be found in ALL the wells in Jerusalem, and also probably in all the villages possessing wells.

[This communication was accompanied by numerous illustrations; a few only are published.—ED. *J. T. M.*]

CONGENITAL MACRODACTYLITIS IN THE PHILIPPINES.

By ISAAC W. BREWER, M.D.

[THIS communication was addressed in the form of a letter to the Editors].

Fort Huachuca, Arizona, April 7th, 1905.

I enclose a photograph of a Filipino boy suffering from congenital macrodactylitis of the thumb, index and middle fingers of the left hand. At the time the photograph was taken, the spring of 1901, he was about fifteen years of age and was apparently well in every other respect. According to his mother's statement the fingers were enlarged at birth, but have increased in size very much during the last few years. He is a native of the Tagalog tribe and has always lived in the suburbs of Manila. His blood was examined for filaria, with negative result, by Dr. R. P. Strong, to whom I am indebted for the photograph.

Captain Walter D. Webb, U.S.A., in a personal communication reports a similar case which he saw with Major H. D. Snyder, U.S.A., at Tacloban, Leyte, Pacific Island. The patient was a man of forty-five years, of the Visayan tribe. In this case the fingers were affected and the disease was congenital.



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THE

Journal of Tropical Medicine

MAY 1, 1905.

THE DESTRUCTION OF MOSQUITOES.

THE article which appeared in this Journal of April 1st, upon "The Effect of Drainage and Other Measures on the Malaria of Klang, Federated Malay States," has been commented upon by Major Ronald Ross in the *Times*. The statements and arguments advanced by Major Ross are worthy of all consideration and support, and he very justly points to the results of Dr. Malcolm Watson's investigations with keen satisfaction. Urban malaria indicates an insanitary condition of any town in which the disease prevails. In a well-paved town with a good water supply and drainage appropriate to the climate, malaria, except for imported causes, should be practically unknown. Dr. Watson's investigations prove this conclusively, and his work is highly creditable not only from the practical good he has done locally, but for his contribution to the science and methods of hygiene. Another phase of this great question is dealt with by Sir Patrick Manson in a letter which appears in *The West India Committee Circular* of March 14th, 1905. His remarks are made anent an opinion advanced by Mr. C. Kenrick Gibbons that the absence of malaria in Barbados is due to the presence in the swamps and ponds of Barbados of a tiny fish which exists in such teeming numbers as to earn the name of "millions," whose staple diet is the larvæ of mosquitoes. Sir Patrick remarks that: "Without further proof, admitting it as a possibility, I would not accept it as proven that Mr. Gibbons's explanation of the absence of *Anopheles* in Barbabos is attributable to the presence of the little fishes called 'millions.'

"Some years ago the London School of Tropical Medicine sent out an expedition to study beriberi, and when the study of that subject had been completed, to study the distribution of the various species of mosquites in the Pacific Islands. As regards mosquito-borne disease these islands have a wonderful similarity to Barbados: elephantiasis and filarial diseases are exceedingly prevalent, malaria in many of them is unknown. Unfortunately the expedition was unable to perform this part of its mission, and the question is still an open one, but it is an important one, and some attempt should be made at a solution, for it may be that conditions that have kept *Anopheles*, and, therefore, malaria from spreading in these Pacific Islands are of such a nature that they could be introduced and used elsewhere as a prophylactic measure.

"Or it may be, as Mr. Gibbons suggests, that *Anopheles* had never been imported; exceedingly unlikely as regards Barbados, considering its proximity to and constant communication with other West Indian Islands, but quite possible in the Pacific Islands.

"There is another and even more important point bearing on the relation of *Anopheles* to malaria which demands study and might carry with it useful practical suggestions. It is this: in certain malarial regions there are circumscribed areas, islands of health—as it were—in a sea of disease, in which, although *Anopheles* abound, malaria is absent. Such places are known to exist in India, Italy, and Mauritius. An effort should be made to ascertain reasons for this apparent anomaly. A hundred speculations crowd on one to supply an explanation, but until substantiated by actual observation on the spot, it is useless to indulge in them.

"The solution of this and kindred problems require a man's whole time and attention, and the first step towards a solution is to find that man; the next to pay him.

"I suggest this as a first step in a practical measure to those interested in the health of the West Indies and other malarial countries."

It is plain that the broad question of malarial prevalence and non-prevalence is a complex one, and requires further investigation. The influences that determine the distribution of the various species of mosquito are undetermined. Some species may be excluded from a particular locality by absence of necessary conditions, others may be excluded from the locality by the presence of an infinite variety of unfavourable conditions.

Translation.

A PECULIAR MAXILLARY DISEASE AFFECTING THE HORSES AND MULES IN WEST AFRICA.

By Dr. Hans Ziemann.

Chief Naval Staff Surgeon and State Surgeon (Cameroon).

(*Translated by P. Falcke.*)

The pathology of the Tropics still continues to present a number of problems, and we still hear of new forms of disease in man and beast which require close investigation.

Towards the end of 1902 I was able to confirm the existence of a pecular disease in the horses and mules of the Cameroon Mountains. This disease bears some resemblance to the nasal enlargement "ngundu" (goundou and anakhrê) of negroes on the Ivory Coast, Upper Guinea; the two ailments, however, are not identical.

The symptoms of the disease are as follows:—

A bony enlargement gradually appears on each side in the region of the external aspect of the upper jaw. At first the tumour is quite smooth and occupies the entire exterior surface of the upper jaw, with the exception of the most anterior part, and a narrow strip about an inch in width which runs along the palatal margin. The skin remains movable over the tumour, which during the following months becomes more and more prominent, and is distinctly distinguishable. The tumour does not appear to be painful on pressure. The buccal cavity is also involved, as it is observable that the palatal process of the upper jaw exhibits no concavity, but is quite flat. Simultaneously an increasing thickening on either side of the lower jaw may take place, in which, however, the submaxillary angle and the vertical rami do not participate. In the lower jaw the tumour commences in the region of the mental foramen and embraces the horizontal ramus in its entire length and breadth, only decreasing at a distance of about three inches from the chin. Under such circumstances the horizontal ramus of the lower jaw may be increased to double or even three times its normal thickness.

In the nasal cavity one observes how the symmetrical tumour growing towards the inner aspect of the superior maxilla more and more, causes it to arch towards the nasal septum, rendering the nasal passages narrow and consequently breathing difficult. The mucous membrane of the nose becomes hyperæmic, and exudes increasing quantities of light, viscid, non-odorous mucus.

No secretion of blood or pus was ever observed. Respiration becomes more and more accelerated and difficult. Finally, even at a considerable distance one may hear the loud whistling breath of the animal, and a few days before death the respiration becomes a series of pants, interrupted by frequent rattling. At this stage the animals present a sad spectacle. Though at the commencement of the disease the appetite is maintained, emaciation soon sets in. A few days before death the appetite is lost, and the animals, with their deformed heads bent, stand there gasping until they are killed to save them from the agony of slow suffocation. Sometimes, however, tracheotomy is performed. The duration of the disease, from the beginning of the first visible symptoms until death, appears to vary between four and twelve months. The temperature does not rise during the course of the disease, but the pulse is somewhat accelerated. Urine and fæces remain normal.

In spite of the gradually increasing dyspnœa, the general condition is but little affected until within a few weeks before death. I never observed squinting in consequence of the tumours; the eyes were always bright.

The blood, in spite of repeated examination, exhibited no abnormalities, with the exception of a few isolated piroplasma of minute size, and to which the native cattle are more or less immunised.

Post Mortem.—The internal organs exhibit nothing out of the common. A small quantity of turbid serous fluid is met with in the pericardium. The heart muscle is relaxed, of moderate thickness, and with deposits of fat.

The lungs are plethoric, contain little air, and the dependent parts exhibit indications of condensation. Both the lower lobes are partially connected with the pleura costalis by fresh fibrinous deposits. The larger bronchiæ and trachea are covered with viscid, glairy mucus.

Nothing abnormal in the spleen.

Liver of medium size, usual colour and somewhat soft. On incision the acini are found to be fatty.

Kidneys.—The cortal substance is parenchymatously turbid. Capsule difficult to remove in places.

No peculiarity in either the intestines, stomach or brain.

After removal of the skin, muscles, eyes, &c., which are all normal, the skull was sawn into bilateral halves and then across, so that the entire buccal and nasal cavities were exposed to view. The mucous membrane of the mouth is seen to be normal, and there is no sign of actinomycosis.

There is a copious secretion of mucus on the

mucous membrane of the nasal cavity, especially in the lateral portion, the mucous membrane there being thickened and hyperæmic. The nasal cavity itself, though constricted by the encroachment of the bony tumour, exhibits no trace of either present or past ulceration. No ulcerations are to be seen on the periosteum of the upper and lower jaw. The teeth are likewise perfectly normal. On transverse section the body of the lower jaw is found to be considerably thickened, as mentioned above. The hyperplastic processes of the upper jaw, sawn through transversely, are found to consist of somewhat thickened periosteum and a compact bony envelope ¼ to ½ mm. in breadth, which covers a hyperæmic, spongy, bony substance. On transverse section of the much thickened upper jaw one observes that here likewise the bony tumour consists of a spongy substance rich in blood, completely filling the entire antrum of Highmore, which is enveloped under the periosteum in a shell of compact, bony substance 3 to 4 mm. in thickness. There was no trace of sarcomatous elements nor of the passage of larvæ of insects or other parasites. Stained streak preparations showed no peculiarities. There were no bony enlargements on other parts of the body. The skull, preserved in formalin, was shipped to Germany for further examination, but was unfortunately lost *en route*. I, however, later on came into possession of a horse's skull which lacks the intermaxillary bones, but distinctly exhibits the peculiar tumour (fig. 1).



FIG. 1.

This skull shows the symmetrical thickening of the horizontal parts of the lower jaw and the sharply circumscribed bony tumour which includes the region of the upper jaw. The tumour of the superior maxilla measures on each side from front to back 25 cm. in length, and vertically 12 cm. The surface of the palate of the upper jaw is flat, in contradistinction to the normal, which is concave. The tumour is most powerfully developed longitudinally in both upper and lower jaws in a direction corresponding to the course of the teeth. The zygomatic process of the upper jaw on both sides is almost obliterated in consequence of the encroachments of the tumour. All the other bones of the head are normal.

This disease was first observed in 1901 in a four-year-old powerful stallion. Unfortunately I could not discover where he was bred. His illness lasted five months from its commencement to the death of the horse. At this time there were two or three horses in the same stable and a mare three years old, which was born in Buea. At the commencement of October the typical enlargement began to form, but the process of disease in this case was very slow. I saw this mare in November, 1902, in the condition shown in fig. 2. There was considerable dyspnœa, and the animal died after a few months.



FIG. 2.

A four-year-old gelding, formerly always healthy, was placed in the same stable with the sick mare in February, 1902. By the end of March the gelding developed a symmetrical, bony tumour, which gradually increased in size, and was accompanied

Enteric Fever.

(6) At Ba and Rewa, both populous sugar-mill centres, series of cases of enteric fever took place, with some fatalities, and assumed more grave dimensions than heretofore recorded in the colony.

Hospital Statistics.

(7) The subjoined table represents the monthly numerical fluctuations in the admissions to the Colonial Hospital :—

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Whole Year
Europeans ..	18	6	13	14	7	9	12	8	13	5	12	15	132
Fijians ..	43	47	231	143	45	42	29	45	44	40	54	43	806
Indians ..	50	62	40	39	38	35	73	82	43	33	21	44	560
Melanesians ..	3	7	9	17	4	2	6	2	2	6	3	13	74
All others ..	1	10	5	7	3	3	1	2	4	5	2	15	58
Monthly Totals	115	132	298	220	97	91	121	139	106	89	92	130	1630
Quarterly		545			408			366			311		

(8) The preponderance of admissions in the months of March and April was caused by an epidemic of measles among the native Fijian populations, Indian coolies being immune through previous attacks in India or during the voyage to the colony; and Europeans not resorting to the hospital for this ailment.

(9) Of the admissions to the Colonial Hospital, cases of general disease numbered 899; and local diseases 715. The former included 358 cases of measles, of whom 295 were native Fijians, 20 Melanesians, 25 Indian immigrants or their children born in Fiji, 12 Europeans, and the remaining 6 miscellaneous South Sea Islanders. Dysentery accounted for 99 admissions, of whom 11 were Europeans, 26 Fijians, 6 Melanesians, 54 Indians, and 2 miscellaneous.

Framboesia.

There were 37 cases of secondary framboesia, 35 of whom were Indians; and 95 of tertiary framboesia, 88 of whom were Fijians. The notable diminution in the cases of the last named is due in part to the establishment of provincial hospitals for Fijians, but is also to some extent probably explainable by the adoption of a slightly different system of classifying them in the returns, owing to a temporary change in the medical staff of the hospital. But the absence of primary and secondary framboesia again illustrates the indifference with which the native race regards this damaging disease, and the unwillingness of the people to place themselves under European treatment for it.

Malaria and other Diseases.

Only one case of malarial fever (a Melanesian) occurred. Only 14 cases of syphilis were admitted; these were all Indian immigrants, 1 primary, 6 secondary, 5 tertiary, and 2 inherited. Of gonorrhœa 19 cases in all were admitted, of whom 18 were Indians. No case of syphilis in any stage in a Fijian was recorded throughout the colony.

Tubercular conditions accounted for 31 admissions; 23 of them were Fijians. The 15 admissions for filariasis were all Fijians; while the 13 of anchylostomiasis, and the 7 of guinea-worm, were all Indians, as well as 14 cases returned as anæmia.

Neoplasms.

(10) Among neoplasms 6 were benign (fibroma and lipoma, all in Indians), and 13 were set down as malignant. The malignant cases were as follows, and this information has been forwarded to the Imperial Cancer Research Laboratories, London :—

Epithelioma of face	... 2 Europeans.
Carcinoma of pylorus	... 1 Fijian, 1 Indian.
,, parotid gland	1 European.
,, mamma	... 1 Indian.
Sarcoma of face ...	... 1 Fijian (aged 10 years).
,, tonsil ...	... 1 European, 1 Melanesian.
,, orbit ...	... 1 Fijian.
,, inferior maxilla	1 half-caste Fijian.
Malignant tumour of kidney	1 half-caste Fijian.
,, ,, pelvis	1 native of Africa.
Total ...	... 13

Local Diseases.

(11) Of the 715 cases of local diseases, 44 belonged to the nervous system, 37 to the eye, 10 to the ear, 6 to the nose, 18 to the circulatory system, 170 respiratory, 157 digestive, 17 lymphatic, 12 urinary, 57 generative, 16 locomotory, 109 connective tissue, and 62 skin.

(12) Only 4 cases of general injury were received, but 74 of local injuries.

Operations.

(13) Two hundred and ninety-five surgical operations were performed in the Colonial Hospital at Suva during the year, namely, 8 on tumours, 8 on cysts, 88 evacuations of abscesses by incision and drainage, 5 extractions of foreign bodies, 2 operations on veins, 23 on glands, 1 on a nerve, 60 on the skin and subcutaneous tissues, 3 on bones, 3 on joints, 18 were amputations, 3 operations on the skull, 11 on the jaws, nasal cavities and mouth, 6 on the eye, 7 on the thorax, 16 on the abdomen (including 4 laparatomies), 4 on the rectum and anus, 4 on the bladder and urethra (not counting simple catheterisation), 19 on the male generative organs, and 6 on those of the female. Of these operations, 40 were performed on European patients, 157 on native Fijians, 74 on Indians, 10 on Melanesians, and 14 on persons of other nationality.

Deaths in Hospital.

(14) The number of deaths which took place in the hospital was 65, of which 6 occurred in Europeans, 22 in Fijians, 2 in Melanesians, 30 in Indians, and 5 in other persons.

Of the 15 cases of enteric fever (of whom 8 were Europeans, 1 a Fijian, and 6 Indians) no death took place.

Work in Provincial Hospitals.

(15) It is possible this year for the first time to include in this report some particulars of the work carried on in certain minor hospitals recently established in more or less remote parts of the colony for the special convenience and physical amelioration of the aboriginal Fijian population. This work has

been undertaken in connection with reforms suggested in the report of the Commission appointed in 1893, to enquire into the causes and possible remedies for the rapid decline of the native race which has been, and still is, taking place.

Seven of these provincial hospitals have been provided in Fiji proper, and one in Rotuma, each under the care of a resident European medical officer, assisted by a native practitioner, a native dresser, and staff of servants.

(16) The following table shows the class of diseases met with in the provincial hospitals; but must not be taken to represent the general prevalence of acute illness among the natives, because these disappointing people persistently decline to resort to hospital treatment in just those circumstances when they might expect to derive most benefit from European medical skill and nursing:—

The largest number of admissions was for frambœsia in its tertiary stages; next in order came tinæ imbricata (tokelau ringworm), diseases of the digestive system, skin, and respiratory system. Tubercle accounted for 88 admissions, with only 3 deaths, a figure which also points to the preference shown by the native to die on his ancestral hearth, rather than risk missing the beaten path to a future paradise by permitting his "spirit" to depart from him within the four walls of a white man's hospital; even though it be built on his own soil and for his special patronage, and maintained partly at his own expense.

Of the provincial hospitals that at Bua was only opened in May, that one at Nadroga in July, and that at Rotuma in July also. The absence of a return from the one at Ra is accounted for by the illness, absence on leave, and finally resignation of the medical officer in charge of it, and the subsequent loss

TABLE SHOWING THE NUMBER OF ADMISSIONS TO PROVINCIAL HOSPITALS FOR NATIVE FIJIANS, AND THE NUMBER AND CAUSES OF DEATHS THEREIN DURING 1903; AND THOSE OF ROTUMANS SEPARATELY.

	Ba		Bua		Kadavu		Macuata		Nadroga		Ra		Tailevu,&c.		Taveuni		Total.		Rotuma	
	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths	Adm.	D'ths
GENERAL DISEASES:—																				
Measles	2	—	—	—	103	2	19	1	—	—			23	—	5	—	152	3	—	
Influenza	4	—	12	—	3	—	1	—	—	—			—	—	—	—	20	—	—	
Dysentery (ac. & chr.)	15	2	7	1	—	—	5	—	7	2			—	—	1	—	35	5	—	
Pyæmia (neonati)	—	—	—	—	1	1	—	—	—	—			—	—	—	—	1	1	—	
Tubercle	3	1	22	—	23	1	9	—	7	1			12	—	9	—	85	3	3	
Frambœsia	33	—	105	—	—	—	156	4	18	1			27	—	39	—	378	5	2	
Filariasis	3	—	8	—	24	1	6	—	4	—			—	—	9	—	54	1	—	Nil.
Rheumatism	10	—	10	—	3	—	1	—	6	—			—	—	3	—	33	—	—	
Scabies	7	—	3	—	—	—	1	—	—	—			—	—	6	—	17	—	—	
Tinea (imbricata)	9	—	70	—	—	—	102	—	—	—			36	—	14	—	231	—	1	
Neoplasms	8	—	3	-	16	1	7	1	—	—			7	—	1	—	42	2	3	
Poisons	—	—	—	—	6	—	—	—	—	—			—	—	—	—	6	—	—	
Debility	2	—	14	—	—	—	7	—	—	—			—	—	1	1	24	1	—	
Brought forward	96	3	254	1	179	6	314	6	42	4	No Return.	No Return.	105		88	1	1078	21	9	
LOCAL DISEASES:—																				
Nervous System	2	—	5	—	9	—	6	1	—	—			14	1	4	—	40	2	—	
Eye	7	—	29	—	34	—	16	—	—	—			15	—	1	—	97	—	—	
Ear	1	—	5	—	3	—	4	—	1	—				—	6	—	25	—	—	
Nose	—	—	—	—	35	—	—	—	—	—			31	—	1	—	67	—	—	
Circulatory System	3	1	3	—	5	2	4	—	—	—			18	4	1	—	31	7	6	
Respiratory ,,	25	—	20	1	8	—	28	2	8	—			33	2	6	—	128	5	3	
Digestive ,,	26	—	27	2	66	1	19	2	12	—			60	6	6	—	216	11	9	
Lymphatic ,,	4	—	1	—	—	—	—	—	—	—			—	—	2	—	7	—	—	Nil.
Urinary ,,	—	—	4	—	7	—	1	—	—	—			10	—	1	—	17	1	6	
Generative ,,	5	—	6	—	22	—	—	—	—	—				1	1	—	40	—		
Locomotory ,,	6	—	8	—	26	—	5	—	1	—			—	—	—	—	46	—	—	
Connective Tissue	32	—	6	—	8	—	20	—	9	—			8	—	7	—	90	—	1	
Skin	12	—	4	—	30	—	1	—	2	—			112	—	3	—	164	—	21	
INJURIES	10	—	10	—	22	—	7	1	2	—			28	2	9	1	88	4	5	
UNCLASSIFIED CASES	1	—	—	—	—	—	9	1	1	—			—	—	2	—	13	1	—	
Total	230	4	382	4	454	9	434	13	78	4			434	16	138	2	2150	52	60	

The above figures, showing as they do only 25 deaths among 2,210 admissions in the eight different hospitals, including Rotuma (a death-rate of 2·35 per cent.) are in accord with the view, already expressed, that the natives come unwillingly to hospital, and for the most part only for slight or chronic ailments.

or destruction of the registers during the hurricane of January 22nd, 1904.

METEOROLOGICAL CONDITIONS.

(17) The meteorological conditions of the islands as recorded by observations officially conducted at Suva expressed in the accompanying return.

Meteorological Return for the Year 1903.

Month	Temperature						Rainfall		Winds		Remarks.
	Solar Maximum	Minimum on Grass	Mean daily Shade Maximum	Mean daily Shade Minimum	Range	Mean	Amount in Inches	Degree of Humidity Saturation = 100°	General Direction	Average Force (0—12)	
Jan. ..			85·1	74·0	90·0—69·8	80	3·53		E.	2	
Feb. ..			85·4	74·6	87·6—67·0	81	4·10		E. S. E.	1	
March			83·9	73·3	89·5—68·3	79	23·01		E. S. E.	1	
April			84·1	72·6	89·8—65·0	78	13·49		E.	1	
May ..			82·0	70·5	86·5—64·5	76	2·64		S. E.	1	
June..			81·5	69·0	88·8—64·5	75	1·45		S. E.	1	
July ..			79·3	67·1	89·3—59·3	72	2·40		S. E.	1	
Aug...	Not recorded.	Not recorded.	80·0	68·3	85·5—61·5	74	2·51		E.	2	
Sept.			79·6	67·6	84·0—62·3	74	6·46		S. E.	2	
Oct. ..			83·7	71·9	88·0—67·0	79	6·70		E.	2	
Nov...			84·7	70·6	88·3—64·5	79	10·02		S. E.	1	
Dec...			87·7	73·0	96·5—68·3	82	4·78		E.	1	
			83·1	71·0	88·7—65·2		6·76		E. to S. E.	2	

Highest corrected reading of barometer ..30·222, on Aug. 7th.
Lowest corrected reading of barometer ..29·529, on Jan. 17th.
Highest temperature in shade .. ..96·5, on Dec. 24th.
Lowest temperature in shade .. ..59·3, on July 15th.
Greatest rainfall in one day .. ..9·18, on March 14th.
Total rainfall during the year .. ..81·09.
Number of days on which rain fell ..207.

Local deviations from those figures depending upon elevation, distance from the sea and aspect, are of course very considerable, more especially as regards rainfall, and the temperature by night.

The year's weather was on the whole more trying for the human population than usual; but correspondingly advantageous for the principal crops—sugar-cane, cocoa-nuts, and bananas.

Plague.

(18) By way of counterbalance to the losses caused by the measles epidemic, the colony continued to enjoy immunity from bubonic plague.

Vaccination.

(19) Vaccination was conducted, as heretofore, principally by native practitioners working under supervision by the European district medical officers. The total number of persons successfully vaccinated was only 703, this duty having been seriously interrupted by the measles epidemic.

The lymph was procured from New Zealand, and was of good quality; but the delays incidental to its transmission over considerable distances by sea and land after its reception in the colony necessarily interfered with its efficiency in some of the more remote districts. It was no doubt chiefly for this reason that 58 doubtful and 211 unsuccessful results were enumerated.

Filariasis.

(20) Besides the report by Dr. Lynch on the epidemic of measles, which is appended, an interesting note on the occurrence of filariæ in Fijian aboriginals will be found forming Appendix II. From this officer's observations conducted on 608 persons, irrespective of clinical symptoms, it appears that one patient in every four admitted to the Colonial Hospital among the natives proper is the subject of filariasis in one form or another; a result which tallies well with observations made in other parts of Polynesia.

But it does not follow from this that one in four Fijians of all ages, classes, and states of health are affected to this large extent.

RETURN "A."

STATISTICS OF POPULATION, 1903.

(FIJI.)

	Europeans and other Whites	Aboriginal Fijians	Rotumans.	Melanesians	East Indians	Mixed and Miscellaneous	Total
Number of Inhabitants on December 31, 1902 ...	2548	93384	2195	1886	19876	2036	121925
Number of Births during 1903	93	3244	108	8	730	43	4226
Number of Deaths during 1903	50	5725	110	54	570	42	6551
Number of Inhabitants on December 31st, 1903	2591	90903	2075	1967	21501	2037	121074
Increase	43	—	—	81	1625	1	
Decrease		2481	120	—	—		851

Estimated net decrease 851

Arrivals and departures not considered. Decrease accounted for by emigration. Increase due to immigration.

SUPPLEMENT TO RETURN "A."

POPULATION OF ROTUMA, 1903.

District	Europeans		H. Caste		Rotumans		Fijian-Rotuman		Niuean		Samoan		Fijian		Solomon Islanders		Gilbert Islanders		H. Caste Tongan Rotumans		H. Caste Tokelau Rotumans		H. Caste Fijian Rotumans		H. Caste Australian Rotumans		New Hebridian		Australian		H. Caste Chinese Rotumans	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Noatau	1			1	171	226			4			1	6	2									1			1						
Ihihu	3	1	6	4	310	265	1				3	8	14	2	8		1	3								1			1			
Pepsei	1				65	75	1	1	2	1																						
Juju	3	2			107	111	1		2	1		2					1															
Malhaha ..					74	94									7																	1
Oniofa	1		1		141	138						2			2						1	2			1						
Ihinauhi ..					87	96						1							3	2			2	1								
Total ..	9	3	7	5	955	1005	3	1	8	2	3	14	20	4	17		2	3	3	2	1	2	3	1	1	1	1		1		1	

Total Males ..	1034	Births ..	108
Total Females ..	1041	Deaths ..	110
	2075	Marriages ..	31
		Divorce ..	1

No. 8.—GAMBIA.

MEDICAL REPORT ON THE COLONIAL HOSPITAL, THE INFECTIOUS HOSPITAL AND THE GAOL INFIRMARY.

By R. M. FORD, *Senior Medical Officer.*

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	—	—	—
Anæmia	1	1	1
Anthrax	—	—	—
Beri-beri	5	3	5
Bilharziosis	—	—	—
Blackwater Fever	1	1	1
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	7	—	—
Delirium Tremens	—	—	
Dengue	—	—	—
Diabetes Mellitus	—	—	
Diabetes Insipidus	—	—	—
Diphtheria			
Dysentery	8	3	8
Enteric Fever	1	1	1
Erysipelas	—	—	—
Febricula	9		9
Filariasis	1		1
Gonorrhœa	4		4
Gout	—		
Hydrophobia	—		—
Influenza	—	—	—
Kala-Azar	—	—	
Leprosy			—
(*a*) Nodular			
(*b*) Anæsthetic		—	
(*c*) Mixed	—	—	—
Malarial Fever—			
(*a*) Intermittent—	1		1
Quotidian	—		
Tertian		—	—
Quartan	—		
Irregular	—	—	—
Type undiagnosed	1		1
(*b*) Remittent	14	2	14
(*c*) Pernicious		—	
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	
Mumps	—	—	—
New Growths—			
Non-malignant	—	—	
Malignant		—	—
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	1	1	1
Rachitis	—	—	—
Rheumatic Fever	—	—	—
Rheumatism	25	—	26
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy		—	—
Septicæmia	—	—	
Sleeping Sickness	5	4	5
Sloughing Phagedæna		—	
Small-pox	—	—	—
Syphilis—	3		3
(*a*) Primary	—		—
(*b*) Secondary	—	—	
(*c*) Tertiary			—
(*d*) Congenital	—	—	
Tetanus	2	1	2
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease Bones	—	—	—
Other Tubercular Diseases	2	1	2
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	4	—	4
Circulatory System			
(*a*) Valvular Disease of Heart	—	—	
(*b*) Other Diseases	1	—	1
Digestive System—			
(*a*) Diarrhœa	8	1	9
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	1	—	1
Congestion of Liver	1		1
(*d*) Abscess of Liver		—	
(*e*) Tropical Liver			
(*f*) Jaundice, Catarrhal	—	—	—
(*g*) Cirrhosis of Liver	—	—	
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	30	1	30
Ear	4	—	4
Eye	23		23
Generative System—			
Male Organs	8		8
Female Organs	8		8
Lymphatic System	5	—	5
Nervous System	11	4	13
Nose	—	—	
Organs of Locomotion	23	—	24
Respiratory System	52	8	52
Skin—	—	—	—
(*a*) Scabies	—	—	—
(*b*) Ringworm	2	—	2
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	—	—	—
(*f*) Other Diseases	138	—	139
Urinary System	8	—	8
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	76	1	79
Parasites—			
Ascaris lumbricoides	—	—	—
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—		—
Dracunculus medinensis (Guinea-worm)	1		1
Tape-worm		—	—
Poisons—			
Snake-bites	—	—	
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	—	—	—
Surgical Operations—			
Amputations, Major	—	—	—
,, Minor	5	—	5
Other Operations	—	—	—
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

No. 8.—THE GAMBIA.

Medical Report for the Year 1903.

By R. M. FORDE.

Senior Medical Officer.

Hospital.

As mentioned in my half-yearly report, sent forward in July last, the extensive and much-needed additions and alterations in connection with the Colonial Hospital were completed in the early part of the year, and the wards of the main building were again ready for the reception of patients by the middle of April.

The female bungalow was not finished until June, the old wooden bungalow being utilised in the meantime.

The new bungalow is a very solid stone structure with an iron roof, and though this roof looks low from the outside, it is nevertheless a cool and well-ventilated building, being amply provided with doors and windows, and the heat of the mid-day sun being screened off by a wide verandah.

The general hospital accommodation is now in a very satisfactory state; the wards are spacious, well lighted and well ventilated. Each has its own separate bathroom and w.c., the latter quite apart from the ward. Just lately the European ward has been fitted with mosquito-proof wire-gauze frames to the windows and doors, and it is intended to extend this to all the wards. From experience I am able to report that this gauze in no way affects the ventilation, and the ward keeps cool and free from stuffiness; at the same time, there is an entire absence of mosquitoes, flies, and other flying insects.

The old female bungalow has had, for some months, to be used for the treatment of incurable cases, and it should, in my opinion, be added to the hospital as a permanent ward for the reception of such cases.

Water Supply.

With reference to the water supply of the hospital, a new underground 10,000-gallon tank has been added at the back of the new female bungalow; this, with the iron one of similar capacity, gives an ample supply of wholesome drinking water for the European and native staffs as well as the patients, and is an important addition to the water supply in general.

Changes in the Staff, &c.

A third medical officer was added to the staff during the year, and Dr. J. C. Franklin was appointed, and arrived in the colony on April 9th.

Dr. Chichester went on leave on April 26th, and returned on October 10th.

Dr. F. A. Baldwin returned to headquarters from the Protectorate in April, and was attached for duty to the hospital; he proceeded on leave on September 23rd.

Dr. Franklin was on duty with the West African Frontier Force at Sallikeni from April to July. He was also on duty as Commissioner and medical officer at McCarthy Island from August to December, when he returned to Bathurst to relieve Dr. C. R. Chichester, who was about to proceed to Southern Nigeria.

Of the native members of the staff, Mr. T. B. Wright's appointment as steward, storekeeper, and clerk was terminated on September 30th, and Mr. C. Shaw appointed in his place.

Mr. J. Bright, senior native nurse, was dismissed on September 19th, and Mr. J. G. McCauley appointed to the vacancy.

An additional native male nurse was added to the staff, as it was found impossible to do the work satisfactorily with two.

Expenditure and Receipts.

Receipts—Paying patients	£38	1	3
Sale of medicines	41	6	1
Total	£79	7	4
Expenditure—Salaries and allowances	£2,236	6	9
Maintenance of sick, medicines, &c. ..	819	13	3
Total	£3,056	0	0

Statistics.

As shown in the following tables, there was a decided increase in the number of patients treated at the Colonial Hospital during the year, more marked in the out-patient department, where the number of attendances was nearly double that of previous years.

TABLE A.

Patients in Hospital.

	Remaining in Hospital Dec. 31, 1902	Admitted during the year	Died	Remaining in hospital Dec. 31, 1903	Remarks
Europeans ..	Nil	15	2	1	One black-water fever, one bilious remittent with old age. Both recent arrivals from Senegal.
Natives ..	6	440	31	5	
Civil Police	3	48	2	—	
W.A.F.F ..	1	78	2	2	
Total ..	10	581	37	8	

TABLE B.

Results of Treatment, &c.

	Male	Female	
Patients remaining in Hospital Jan. 1, 1903	9	1	10
Patients admitted during the year 1903..	443	128	571
Total number treated	452	129	581
Cured	348	100	448
Relieved..	54	19	73
Not relieved	11	4	15
Died	31	6	37
Remaining in Hospital December 1, 1903	8	Nil	8
Total number treated	452	129	581
Average stay in days of patients discharged	20	7	
Average stay in days of patients died ..	18	4	

The deaths were due to the following diseases:—

Diseases	No.	Diseases	No.
Apoplexy	2	Meningitis	2
Abdominal tuberculosis	1	Nephritis	2
Beri-beri	3	Pneumonia	5
Broncho-pneumonia	3	Pyæmia	1
Bilious remittent fever	2	Sleeping sickness	4
Blackwater fever	1	Tetanus	1
Diarrhœa	1	Senility	1
Dysentery	3	Tropical fever	1
Gun-shot wound	1	Tubercular meningitis	1
Enteric fever	1	Ulcer of stomach	1

Table A shows an increase of 99 in the number of in-patients over the return for the previous year.

The death-rate was higher than usual among the native patients. An outbreak of beri-beri at the gaol, necessitating the removal of some of the prisoners suffering from that disease to the Colonial Hospital; pneumonia due to exposure owing to the flooding of the lower parts of the town during the heavy rains; dysentery and an increased number of cases of sleeping sickness, accounting for half the number of deaths.

TABLE C.

Out-Patients.

	Old Cases	New Cases	Total
Male	2494	2678	5172
Female	1523	1782	3305
Total number of cases	4017	4460	8477

An increase of 4,652 on that for the previous year. The prevailing diseases were the following:—

Ascarides, abscess, bronchitis, injuries, constipation, intermittent fever, conjunctivitis, neuralgia, diarrhœa, ophthalmia, dyspepsia, otorrhœa, dysentery, rheumatism, febricula, stomatitis, gonorrhœa, skin diseases, ulcers.

The total number of patients treated at the hospital during the year, including in-patients and out-patients, was 9,058. Of the rarer diseases met with there were: Sleeping sickness, 4 cases; beri-beri, 3 cases; enteric fever, 1 case; guinea-worm, 1 case; syphilis, 2 cases.

European Officials.

There were twenty-three admissions on the sick list during the year, one of whom was invalided. The diseases were: Biliousness, 3; lumbago, 2; congestion of liver, 1; lymphangitis, 1; diarrhœa, 2; malarial fevers, 6; febricula, 4; malarial cachexia, 1; gastritis, 1; strain of knee, 1; gout, 1. Case of invaliding, malarial cachexia. There was no death.

Native Officials.

There were thirty-one admissions on the sick list during the year. The prevailing diseases were: Auralgia, intermittent fever, bronchitis, intercostal neuralgia, colic, lumbago, diarrhœa, lymphangitis, dyspepsia, spinal sclerosis. There was no death and none invalided.

European Non-Officials.

Of these there were twenty-five treated for various diseases. As follows: Biliousness, 5; lymphangitis, 1; blackwater fever, 1; malarial fevers, 10; cellulitis, 1; sprain of ankle, 1; dyspepsia, 1; stomatitis, 1; febricula, 1; synovitis, 1; fracture of ribs, 1; ulcer, 1.

The resident European population during the year was 105, and among these there were 48 admissions on the sick list, a large number being cases of a trivial nature. The total number of malarial fever cases was 16, with one case of blackwater fever and one of malarial cachexia. One case of remittent fever was an officer from a warship recently arrived from Sierra Leone, where most likely the infection took place, as several other members of the crew also suffered.

The two deaths that occurred among the non-official Europeans were members of the French Catholic Mission, who had only recently arrived in the colony from Senegal, where they lived from fifteen to twenty years. One was aged over 70, and died during a severe attack of bilious remittent fever, the immediate cause of death being cardiac failure. The other died from blackwater fever, having had three previous attacks in Senegal.

TABLE D.

The following table shows the number of cases of illness and invalidings among Europeans during the past five years, and the number resident in the colony for each year:—

	1899	1900	1901	1902	1903
No. of Europeans Resident	80	71	88	98	105
,, ,, Treated	66	90	89	26	47
,, ,, Died	1	9	4	2	2*a*
,, ,, Invalided	1	Nil	3	2	2*a*[1]

(*a*) Blackwater fever, and bilious remittent fever.
(*a*[1]) One for malarial cachexia.
One for iritis.

Infectious Diseases Hospital.

There was no cases of small-pox or other infectious disease during the year.

The Gaol Infirmary.

With the exception of an outbreak of beri-beri in the first half of the year, the general health of the prisoners was fairly good. The average daily strength of prisoners was 19, and the following is the number of cases of illness treated during the year:—

In-patients	24
Out-patients	152
Total treated	176

There were eight deaths from disease and one by execution. The causes of death were: Beri-beri, 3; heart disease, 2; Bright's disease, 2; pernicious anæmia, 1.

The prevailing diseases were the following: Beri-beri, fever, boils, œdema, catarrh, rheumatism, constipation, ringworm.

The sanitary condition and arrangements were fairly satisfactory during the year, the gaol premises and yard being always kept in a clean state, the cells and corridors washed regularly and Izal disinfectant freely used.

The ventilation of all the ground-floor cells was much improved by enlarging the openings in the doors and also the windows, and the area of some of the older cells was increased by knocking two into one.

This improvement in the ventilation and area of the cells, with a thorough cleansing and disinfecting, had, in my opinion, the effect of completely ridding the prison of beri-beri, the introduction of which was traced to three prisoners who were sent in from a town in the Protectorate, where it was afterwards discovered the disease existed for some time.

It is now nearly eight months since the last case occurred, and at present the health of the prisoners is very satisfactory.

Lunatics.

A lunatic asylum is not considered necessary in Bathurst, as all lunatics are at present sent to Sierra Leone, where there are at present three under treatment from this colony.

General Remarks.

The general health of Bathurst was fairly good during 1903, though the death-rate among the native population was higher than that of the previous year, there being 49 more deaths. This rise was not due to any epidemic disease, as the town was quite free from any disease of this nature during the year, and, in my opinion, it can only be explained by the exceptionally heavy rainfall, which, keeping the low parts of the town flooded for considerable periods, caused much disease and discomfort among the poorer classes of the natives, who were for days, on more than one occasion, unable to light fires to cook their food or dry their scanty garments.

The average monthly number of deaths for the five rainy months was 34, that for the seven non-rainy months being 25. In the previous year, with a rainfall of only a little over half the average, the number of deaths for the same periods was 23 and 21 respectively. This goes to show the deleterious effect of a heavy rainfall on the public health of a low-lying tropical town such as Bathurst.

The health of the resident European population was satisfactory, apart from the deaths of two members of the French mission already referred to, which were the only serious cases of illness among Europeans, all the other cases being of a mild type.

The total number of Europeans resident in the colony during the year was 105; of these, 48 were treated for different ailments, only 17 being cases of malarial fever, including one case of blackwater fever. This record, though not quite so good as that for 1902, shows a continuance of the improved health among Europeans noticed in that year, as a result, I now have no doubt, of the anti-mosquito sanitation systematically carried out by the Board of Health.

TABLE E.

The following table shows the total deaths from diseases at all ages and under five years, and the rate of each 1,000 of the population of Bathurst for the past five years:—

Year	Total Deaths	Rate per 1,000	Deaths under 5 years	Rate per 1,000	Remarks
1899	327	37·15	137	15·56	
1900	350	39·77	120	13·75	
1901	340	36·63	137	15·56	
1902	266	30·22	112	12·72	
1903	315	35·79	130	14·77	

I wish to express my satisfaction at the benefits derived by the hospital from the addition of the European nursing sisters to the staff; they are of incalculable assistance to myself and the medical officer in charge of the hospital in the nursing of patients as well as in the general management of the institution. Both Europeans and natives are much more ready to become in-patients than formerly, as they now know they will receive proper care and attention in the hands of trained European nurses, which the natives as well as Europeans thoroughly appreciate.

Sanitation of Bathurst.

The town was kept in a fair sanitary condition during the year. The usual scavenging was carried out regularly by a gang of twenty labourers and two horses and carts under the supervision of an inspector and an assistant inspector of nuisances. The filling up of Half Die Swamp was discontinued owing to the difficulty of procuring material, and also the scarcity of labour; a large portion of that already levelled up is now built over, and several streets are laid out on it. All rubbish, consisting of house refuse and leaves, &c., raked up in the streets is carried to the back of the town, where it is burnt and utilised for the filling in of the swamp and levelling up depressions in the open areas.

The question of the disposal of human excreta is at present receiving the attention of the authorities, and the adoption of a "Horsfall Destructor" for the incineration of all excrementitious matter is under consideration, but I am afraid that the cost of any method would be found too large for the revenue of this colony. Some improvement could, however, be brought about with reference to the disposal of human excreta by enforcing the adoption in private houses and compounds of a fixed form of masonry closet to take the place of the present insanitary arrangement of simply digging a hole and putting a cask or barrel into it, over which a box or seat is placed; this allows free percolation of the contents into the surrounding soil, and consequently contamination of the neighbouring wells.

by severe dyspnœa. I took the animal to Duala, in order to observe it further, and it died there in February, 1902.

In September, 1902, a powerful horse imported from Lagos to Victoria, at the foot of the Cameroon Mountains, died after a four months' illness and under the symptoms described above. This horse had frequently been ridden to Buea, where it may have come into contact with diseased horses.

In Buea, even before my arrival, the sick animals had been carefully isolated, and not allowed to graze on the same pasture, and the stalls were supposed to have been thoroughly disinfected. Nevertheless, in January, February, and March of 1903 three adult horses were attacked, as well as a mule, which died. I recommended that the horses should be treated in the following manner: Every morning and evening the nasal cavities were syringed with a warm solution of physiological salt. For a fortnight every horse had 20 to 30 gr. of iodide of potash daily mixed with its food, and the entire region of the tumour was thoroughly rubbed with grey ointment. All these animals are said to have been cured by this treatment, but the author has only written communications to that effect.

In any case, the prognosis is very unfavourable in untreated cases. It is worthy of remark that hitherto there have been no cases of the disease in foals, though this statement must be accepted with caution on account of the limited total of cases.

Stallions, mares, and geldings are all liable to the disease. Of the few mules here one was attacked; not one of the twenty-five asses in Buea showed symptoms of the ailment, though they were subject to animal malaria in a severe form, and some died from it.

I never observed in the native population cases of nasal enlargement such as exists in Sierra Leone, &c. Goundou also, the points of departure of which are the nasal processes of the maxilla superior, only appears in the negro at the age of 14, and has an exceedingly chronic course, it being possible for the patients to live thus afflicted for many years without, to my knowledge, feeling any great inconvenience, though dyspnœa may occur, but not to a marked degree. Dr. Schütz has called my attention to the fact that man breathes through both nose and mouth, whilst horses can only breathe through the nose. This is an important factor in the difference of the duration of the disease in man and horse. One negro seen by me in Sierra Leone had had goundou for eight years, the tumours being about the size of walnuts on each side. In this case there was a considerable secretion of mucus from the mucous membrane of the nose. There was, however, in this case no thickening of the lower jaw, and there was no dyspnœa, causing breathing through the mouth. Moreover, this disease of indigenous persons usually offers a good prognosis *quo ad vitam*. One may therefore observe that there are considerable differences between goundou and the so-called maxillary disease of the horses and mules of Cameroon. It may also be mentioned that the sick animals had always had the same sort of food and stable accommodation as the healthy ones.

Etiology.—The nasal mucus was removed with a sterile pledget, and

(1) On November 24th, 1902, was well rubbed on to a horse coming from Jaunde, in the interior of Cameroon, which was suffering from chronic nagana, though there were no parasites in the blood at the time.

(2) On November 24th, 1902, the same was done to a mule, likewise suffering from nagana, and coming from Jaunde. Very few parasites in the blood.

(3) On January 4th, 1903, nasal mucus removed with a sterile pledget from the same sick horse was rubbed into the nostrils of two asses from Adamaua which were suffering from chronic animal malaria (piroplasma type), and the experiment was repeated three times within the next fortnight.

This horse (*Exp.* 1) died on December 29th, 1902, and on the 35th day of observation, from chronic nagana, and without exhibiting a tumour.

The mule (*Exp.* 2) died on January 13th, 1903, after 49 days' observation, from chronic nagana; at the obduction there was no sign of a tumour in course of development.

Exp. 3.—Of the two asses, the first died after 63 days' fruitless observation from the results of artificial infection with *Trypanosoma virax*; the other ass was still alive when I left Cameroon at the end of April, 1904.

From the above one may gather that, even if the nasal mucus contains specific germs of disease, the period of incubation must be at least fifty days for horses and mules—which seems very improbable—and asses are not susceptible.

On February 15th, 1903, the horse brought from Buea died. In the previous November streak preparations from the nasal mucus had been made and cultures placed on agar-agar. No parasites were found in the streak preparations. In numerous cases the following microbes were cultured again and again:—

(1) Thick, plump, almost roundish immotile bacilli, much granulated, 2μ in length, and with rounded-off angles.

(2) Diplococci.

(3) Staphylococci.

I was unfortunately unable to follow the biological development and other qualities of this micro-organism, but solutions containing the pure cultures were rubbed several times into the nasal cavities of the experimental animals with negative results as mentioned above. No larvæ of diptera were ever found which might have caused the hyperplasia by setting up reactive inflammation, so the etiology of this disease still remains shrouded in mystery.

I sent Laveran the photographs, and recently I had a letter from him informing me that in Madagascar there occurs a disease in horses which may be identical with the ailment I have described. Moreover, another disease has been observed which appears to be similar in etiology to mine: "Ostéoporose des mulets algériens transportés au Tonkin."[1]

Perhaps this article may furnish a stimulus for investigation and research in other colonies, and, as all other treatment has hitherto been futile, that proposed by me may be given a trial.

Addendum.—After the completion of this article I received a reprint from Laveran, "Sur une maladie infectieuse des equidés, avec altérations du système osseux, observée à Madagascar," par MM. Charon et Thiroux, in which there are two references to a

1 Ballu, *Recueil des mémoires et observat. sur l'hygiène et la méd. vét. militair*, i., xx., 1899.

similar disease: (1) Germain, "Sur une maladie observée sur des chevaux égyptiens importés en Cochinchine" (*Recueil de Médecine Vétérinaire*, 1881, juillet et suiv.); (2) Pecaud, "L'ostéomalacie des Equidés au Tonkin" (*Revue Générale de Médecine Vétérinaire*, janvier, 1904). In the latter the author directs attention to the infectious nature of the disease.

Charon and Thiroux describe an infectious disease with alterations of the osseous system, which has some analogy to the osteomalacia observed in Indo-China. In this disease there are manifestations of paresis and weakness, and the conjunctivæ are yellow. There is fever, acceleration of the pulse, increased frequency of respiration, occasionally also hæmoglobinuria; hypertrophy and hyperæmia of the liver and spleen may set in, and finally also paraplegia. Spontaneous fractures of the bones may occur, as well as enlargement of the upper and lower jaws and of the nasal bone. These deformities of the bones may also occur in very acute cases. The duration of the disease averages from sixteen to twenty days, or may go on for several years. The liver and spleen are found at obductions to be hypertrophied, and the liver is frequently yellow in colour. Above all, the comminutive fractures of the bones and the fragility of the tendons appear to be characteristic.

Thiroux has confirmed piroplasmosis in a few cases of osteomalacia of horses in Madagascar, but by no means in all cases, so that the etiology of this disease is still obscure.

The symptoms presented by the horses as described by the French authors exhibit considerable differences from the specific affection of horses and mules in Cameroon described by me.

I shall be grateful to receive communications as to similar conditions from other parts of the Tropics for purposes of comparative investigation and research. — Translated from *Archiv f. wissnesch. u. prakt. Tierheilk.*, vol. xxxi., 1905.

EXTRACT OF A LETTER RECEIVED FROM AN OFFICER RESIDENT IN NORTHERN NIGERIA.

Outfit for the Interior of a Tropical Country.

To combine cheapness and efficiency is the object of the following rough notes. A man going to Northern Nigeria should bear in mind that he has to live there, and is not going there for a mere month or two; also that a certain amount of comfort is essential for good work and sound health.

All but very bulky articles can be got after arrival through the post. There is no difficulty now about Customs on Post Office parcels.

Mosquito Netting.—Get smallest mesh available. But if you cannot get a very small mesh get a book muslin net with a few yards for repair. To obviate necessity of frequent repairing (daily in fact, otherwise fever for certain), get edges bound with linen with cross bands. The usual (and most idiotic) method is for the whole net to go *over* the poles with the shot-weighted ends trailing on the ground. If poles are used the ends should always be tucked *under* the blankets and consequently hung *inside* the poles by means of tape loops through which the poles can pass. The ends of the net should be bound with linen so as to reach say, six inches above surface of bed when tucked in. This is to prevent your hands and feet getting bitten by resting them against the linen.

One mosquito curtain as above, with a few yards for mending and for doors of huts, is ample.

Bed, &c.—X-bed cannot be beaten. Mosquito poles as at Way and Co.'s, a good idea.

Usually you can do without poles altogether by having good cord to tie ends to roof, &c.

Mattress.—Cork best. Way and Co.'s, good and cheap.

Pillow.—Get wire-spring pillow, though have not tried it myself.

Sheets.—One pair Jaeger sheets *at least*. Small size good enough for camp bed. Usual size far too big. *Two* pairs best for fever.

Blankets.—Take out two thin, two thick, any kind.

Pyjamas.—Three suits of Jaeger's thinnest will be enough. If enough in hand of ordinary sort, do not worry.

Belly-band.—Absolutely necessary here, where a stomach chill at night (they are only worn at night) is so easily got, and so very dangerous. I find a strip of Jaeger's sheeting with tapes do well. *Two* bands enough.

Mosquito Boots.—These are simply very loose and thin boots with loose uppers to tuck trousers into, *e.g.*, like a top boot, but extremely loose. Made to order in canvas or buck-skin. Can be got sometimes in Canaries, and can be easily purchased in N. N. in most provinces.

Uniform.—Two white mess jackets, three pairs white trousers, one white tunic, one khaki tunic, *quite* enough. *Re* revolver—see notes *re* firearms. Three white mess shirts (soft linen), half a dozen collars.

Clothing.—Get your measure taken at home, and you can order out what you want afterwards. Take out two pairs riding breeches (not khaki drill, but khaki or other cord), three pairs khaki slacks (ordinary trousers), clothes for board ship (they do not dress there), one suit flannels (dark), and one suit dark for night, with usual clothes (old) you have. Take out *all* your clothes, as you do not know where you may have to go. Climate varies from average of 90° to average 78°, running up and down from 110° to 32°!!! On the Kano Expedition, while marching, *i.e.*, on foot, men had to wear great coats, and then could not keep warm in the harmattan season (windy season, December to March, about). Shirts, &c., usual ones or board ship, of course. Shirts for camp, three thin flannel, with quilted spine pad attached, and one dozen 2s. soft white shirts, without collars. In each case have neck two sizes too large; collars of each, detachable, same size. Great coat absolutely necessary. Waterproof (for horseback) *very* necessary. One khaki helmet (uniform) enough. One Cawnpore pith helmet.

Boots.—Get three pairs of strong light tan lace-boots without nails, but take plenty of sole-protectors with you. Gaiters, of course, also one pair "field-service" riding-boots. Do not know them myself, but men out here swear by them.

Saddle, &c.—Semi-Colonial best, small size. Fit for wallets, of which a pair is useful. Soft-soap, plenty. Have two canvas water-bags to hold a quart each, with leather guard to save horse, made to strap to saddle. Get small wooden tin-lined case with lock to hold saddle, &c., only; total weight, 50lb., inclusive of saddle, &c.

Tiffin Basket.—May seem a mere luxury. Is no such thing, though, like almost everything else, you can "do without it." Do *not* get it fitted, but have compartments to take the following: Two sparklet (metal) bottles; one bottle whisky; two small bottles "fizz"; luncheon tin; mustard, salt, pepper pot; two large knives; two small knives and forks; two desert spoons; two tablespoons; one glass (in wicker); one metal mug; two metal tea cups; two small aluminium plates; two large ditto; two soup plates; three or four aluminium deep dishes to hold anything from soup to roast. The whole basket should not weigh more than 40lb., fitted as noted. Include two small tablecloths to fit table 2 ft. 6in. by 2ft.; teapot and coffee-pot of aluminium. Above is for camp use exclusively.

Cooking Pots.—If you can afford it get two aluminium saucepans, one small aluminium kettle for camp, but do not worry about this. Ordinary pots, &c., you can buy at Niger Company's depôt, but as you usually have to start from Lokoja almost before you have arrived, best to have three small saucepans (enamelled) and one kettle; also four iron supports for same.

Headquarters Mess Kit.—You are almost sure to have to entertain casually, at least, so take half a dozen sets *complete* best enamelled ware procurable—knives, forks, spoons, &c., cheap, but all marked, say, "C. D.," otherwise they will go astray for dead certain. Three tablecloths, and one dozen napkins essential, also one dozen glasses, toast rack, &c., mincing machine, &c.

Bath.—Usual canvas bath and basin combined very good. Tin bath in wicker case, &c., either very heavy or much too small.

Boxes.—Get *small* size uniform cases only, which when full will weigh only 50lb. It will be more expensive, of course, *e.g.*, more boxes required, but if you have to march forty days at a stretch, up to Sokoto, for instance, it is well worth having light loads for the carriers. *Four* cases should do you, or perhaps five, last being for books, papers, medicines, filter, &c.; rest of clothes (old ones and rough ones, boots, &c.) jam into cheap, *locked* kit-bags at 12s. 6d. each.

Filter.—Usual thing is to go in for the smallest size hand filter, which I think a great mistake; gets clogged very easily, necessitating constant scrubbing of cylinder (almost every bottle filtered necessitates cleaning of cylinder), and is very hard to manage as it slips about all over the place. Inspect the Berkefeld filters yourself and choose a *foot-rest pattern*, which a boy can manage easily.

Medicine.—Burroughs and Wellcome's three-guinea chest much too bulky and awkward; small wallet size ample. Take out quarter of a dozen clinical thermometers, as they break so easily.

Provisions, &c.—You should get six months' supplies of bare necessaries, without which you cannot do, and among these you cannot class meats or vegetables, as both of these can be obtained fresh, and it is bad to live on tinned meats, &c. Meat you get in the country is: (1) Fowls (miserable things, but still eatable). (2) Mutton of sorts, or goat. Turkeys, ducks, beef, pigeons, guinea-fowl, partridge, &c., can be got in some places. To make sure, however, have, say, one box tinned meat, &c., and one box tinned vegetables separate from the others. The only procurable country vegetables are sweet potatoes, yams, onions, beans, and a kind of brinjal.

Pack your twelve boxes *necessaries* as follows, each box enough for two weeks: Flour, 12½lb.; yeast or baking powder, ½lb.; tea, 1lb.; coffee, 2lb.; cocoa, ¼lb.; sugar, 6lb.; milk (smallest size tins), 4lb.; salt, ¼lb.; rice, 8lb.; potted meats (1d. tins), 1lb.; jams, 4lb.; Lazenby's soup, ½lb.; dried fruits for stewing, 3lb.; chutney, ½lb.; curry powder, 1lb.; sparklets (4 dozen), 1lb. Total net weight of contents 40lb. Box, say, 8lb. = 48lb. One box tinned meats at 1s. per lb. average = 40s. One box tinned vegetables at 6d. per lb. average 20s. (Really sufficient would be 20lb. meats, 20s.; 20lb. vegetables, 10s., 30s. One case quite enough.

Battery.—A good second-hand twelve-bore (*not* Jeffery's wild-fowl gun, which is quite useless for sport, being too heavy and clumsy); 500 cartridges, No. 5; 200 No. 4; 200, No. 2; 50 No. 1.

Revolver; would advise (unless you have a revolver) to get a double-barrelled twenty-bore slug-pistol; you cannot miss with it, and riding along you often get a snap-shot at guinea-fowl or partridges along the road—sitting shots. Take out 100 cartridges.

Rifle; do not worry as there is very little game to be had. If you have one, take it out; if not, you have numberless chances of picking up one cheap out here; and it all depends where you are stationed as to whether you will get a shot in the year.

Glasses.—Bring yours out. Do not buy a pair; bush is too thick to be of any good.

Lamp, Punkahs, &c., &c.—Lamp; Lord's lamp essential. Better take some oil, too, for going up the river from Burutu. As these notes are all for economy, I shall not dwell on the great boon of an electric lamp, You can get a first-rate fan, I believe, for £10. Should get lamp, too, for same amount.

Folding Book-shelves.—Two cheap sets for wall; very useful.

Reviews.

A Treatise on Plague, dealing with the Historical, Epidemiological, Clinical, Therapeutic and Preventive Aspects of the Disease. By W. J. Simpson, M.D.Aberd., F.R.C.P.Lond., D.P.H.Camb., Professor of Hygiene, King's College, London; Lecturer on Tropical Hygiene, London School of Tropical Medicine; formerly Health Officer, Calcutta; Medical Adviser to the Government of Cape Colony during the Outbreak of Plague in 1901; Commissioner for the Colonial Office to enquire into the Causes of the Continuance of Plague in Hong Kong. Pp. 466. Illustrated.

Price, 15s. net. Cambridge: at the University Press, 1905.

Preliminary Notice.

Professor Simpson's "Treatise on Plague" is especially welcome at the present moment. We have reached, it is to be feared, a callous state of mind concerning the malady and seem to be content to merely chronicle its ravages. The condition of India at the present moment is one that especially calls for a remedy, if remedy can be found, but up to the present moment the sciences of medicine and hygiene seem foiled. Could Professor Simpson's trenchant words be seriously taken, it would become us to apply ourselves to the amelioration of this terrible scourge, if not for the honour of medicine and the justification of medicine as a science, at least for the sake of humanity and the relief of suffering. The means of fighting plague are clearly demonstrated by Professor Simpson, who has won his spurs in that direction in several countries. At the Cape of Good Hope and at Hong Kong the practical suggestions made by him were the result of careful investigations and study, and the benefits accruing to his efforts afforded excellent evidence of the public good likely to follow from scientifically applied hygiene.

Plague must in future be dealt with by the hygienist; the bacteriologist has so far performed his part, he has told us the cause of plague and shown us how the *Bacillus pestis* behaves in innumerable media and how it reacts under varying conditions. Practical hygiene is what is now required of us, and aided by bacteriology, has a great work to perform.

Part I. of the "Treatise on Plague" deals with the history and distribution of plague, and had Professor Simpson given us nothing more than this section of his great work we would have been content to have thanked him for his labours. He traces plague from biblical and early Christian times through all the centuries down to the present day; an excellent piece of historical writing compiled with infinite pains and sound judgment.

Part II. deals with the epidemiology of plague, and in the eight chapters devoted to this aspect of the disease the epidemiologist and bacteriologist will find every sentence interesting.

Part III. is devoted to plague in the individual. Here the clinician and pathologist will appreciate the succinct accounts of the morbid anatomy and pathology, the clinical features, the diagnosis, prognosis and treatment of plague contained in Chapters XII. to XVI.

Part IV. includes Chapters XVII. to XXI., and is concerned with the "Measures for Prevention and Suppression of Plague." This part of the treatise is written with the true instinct of the expert, and is the best in a book in which all is good.

Appendix I. affords a tabulated view of the plague in India during 1904, when no less than 1,040,429 persons succumbed to the disease.

In Appendix II. is published the full text of the International Sanitary Convention of Paris, 1903.

The treatise is illustrated by maps, diagrams, clinical charts and photographs, which serve to complete a work which is creditable alike to the author and to the publishers, besides being a valuable addition to permanent medical literature. J. C.

Correspondence.

THE DEVELOPMENT OF FILARIÆ IN THE MOSQUITO.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

DEAR SIR,—My apology for committing the following somewhat nebulous matter to print is that I have no opportunity of further investigation.

There is in Sierra Leone a certain Culex mosquito which is very common. The mosquito has not yet been identified. As far as I could make out, this mosquito is not a blood-sucker.

Just before leaving West Africa for this country I found in the thorax of one of these mosquitoes two motile worms, and in another mosquito of the same species I found a single worm.

The organisms resemble figures (*b*), (*c*) and (*c*) 33 shown on page 563 of "Manson" as stages of the *Filaria sanguinis*.

If the mosquito proves to be not a blood-sucker, the finding of filariæ in its body becomes interesting. I have asked a colleague to pursue the investigation further.

The fact of the existence of such filariæ would not necessarily clash with the accepted account of the development of *Filaria sanguinis*, for the worms may be some other kind of nematode having a similar appearance, but being possibly harmless.

It will require, however, to be made known if a harmless mosquito contains these worms; for, according to current views, the discovery of filariæ in the tissues of any mosquito is, I imagine, presumptive evidence that the insect is dangerous to man or some lower animal.

I am, Sir,

Yours faithfully,

F. SMITH,
Major, R.A.M.C.

Woolston, Southampton,
April 22nd, 1905.

New Books.

THE WELLCOME PHYSIOLOGICAL RESEARCH LABORATORIES, BROCKWELL HALL, HERNE HILL, LONDON, S.E. Director, W. Dowson, M.A., M.D.

The following interesting papers have been issued as reprints by the Wellcome Laboratory authorities:—

(1) The Chemical and Physiological Assay of Digitalis Tinctures. By George Barger, M.A., D.Sc., and W. Vernon Shaw, M.A., M.D. (Oxon.).

(2) Acute Rheumatic Fever and its Etiology. By W. V. Shaw, M.A., M.D. (Oxon.).

(3) A Microscopical Method of Determining Molecular Weights. By George Barger, M.A., D.Sc.

Should any reader of the Journal desire a copy of any of these articles they will be forwarded on application to the Editor.

Notes and News.

No fewer than 215,326 persons died of plague in India during the month of March, 1905.

BAD NAUHEIM.

The Lindenhof Sanatorium.

Nauheim is so well known to the medical profession throughout the world that but little can be said to further enhance its claim as a health resort and as a "cure." In the pleasant vicinity of the bath-houses, the springs and the park, is the magnificent and well-equipped sanatorium of Lindenhof, under the direction and care of Dr. Wachenfeld. In this sanatorium not only will the invalid find comfort, but anyone travelling for the purpose of change of air and environment will find in the grounds and gardens and in the immediate neighbourhood much to attract and to occupy the attention and to interest.

The site of the sanatorium has been wisely chosen, and the building has been erected with all the requirements of the most advanced hygiene fully carried out. The food is excellent, and the attendance all that could be desired. The charge for board and residence varies from 10 to 30 marks per day, according to the requirements of the visitors.

Nauheim has become known chiefly as a resort for persons suffering from heart diseases; it may be pointed out, however, that in some way this reputation has served to prevent the full advantages of Bad Nauheim being enjoyed, for it is principally for persons suffering from so-called blood diseases, such as gout and rheumatism, that the "cure" is most useful and efficient.

Tropical residents returning to Europe for a change, or to get rid of malarial, hepatic, or splenic troubles, will find Bad Nauheim to be one of the most pleasant and curative of the many spas of Europe.

CYLLIN.

Prepared by Jeyes' Sanitary Compounds Company, Limited.

We have on several occasions drawn attention to this excellent drug. In the article by Dr. Hartigan on the utility of Cyllin in cases of sprue which recently appeared in the Journal, the undoubted benefits attributable to the drug in this disease were clearly and convincingly stated. The Jeyes' Sanitary Compounds Company has devoted infinite pains to perfect this drug and bring its usefulness before the medical profession.

We have now further proofs of its power as a disinfectant, as the following comparative tables will show:—

Bacteriological Test.

Method.—To 5 cc. of a particular dilution of the disinfectant in sterilised water, add 5 drops of a 24 hours' blood-heat culture of the organism in broth; shake, and take sub-cultures every 2½ minutes up to 15. Incubate for at least 48 hours at 37° C.

Sample.	Organism.	Carbolic Acid Co-efficient.	Price per Gall.	Cost of Disinfectant equivalent to 100 Gallons of Carbolic Acid.
Carbolic Acid	Plague	1·0	1/0	£5 0 0
Formalin	Plague	0·3	5/6	91 13 4
Cyllin	Plague	34·0	4/0	0 11 9
Carbolic Acid	Cholera	1·0	1/0	5 0 0
Formalin	Cholera	0·3	5/6	91 13 4
Cyllin	Cholera	32·3	4/0	0 12 4

In December, 1904, Professor C. Fraenkel, of the University of Halle, stated:—

"It follows clearly from these results that the toxicity of Cyllin for animals is relatively limited, and in no way comparable with that which is exerted by, for instance, carbolic acid. Taken in context with the astonishing efficiency of Cyllin in the disinfection of the various pathogenic bacteria, this fact must be described as extremely satisfactory. I do not doubt, therefore, that Cyllin will obtain general use for the purposes of disinfection as a preparation of extraordinary utility."

In the *Lancet* of April 15th, 1905, Dr. E. Klein, F.R.S., reports most favourably upon the germicidal influence of the "Cyllin inhalant."

The important lesson in practical hygiene demonstrated by Dr. Klein and F. T. Allan, published in *Public Health*, October, 1904, on the potency of Cyllin in destroying tubercle in sputum on the floors of public resorts, is a marked testimony to the efficacy of Cyllin in this direction. All that is necessary is to well wash the floor with a mop dipped in a solution of Cyllin water, 1 in 160 (3 oz. Cyllin to 3 gallons of water, *i.e.*, 6 tablespoonfuls in a pail of water). A floor kept moist with this solution overnight will be free of tubercle bacilli, presuming any were present, by the morning. *Cyllin* is a safe, potent, and eminently practical disinfectant.

Our own experiences entirely support the statements concerning the benefits to be derived from the use of Cyllin as a drug and as a disinfectant.

Obituary.

DR. JOSEPH EVERETT DUTTON.

It is with sincere regret that we chronicle the death of Dr. J. E. Dutton, whilst engaged in the investigation of trypanosomisis of tick fever, at Kosongo, in the Congo, on February 27th, 1905. The information only reached us as we were going to press, so we are compelled to reserve an account of the life of this distinguished man until our next issue.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Plague.

Prevalence of the Disease.

India.—During the weeks ending February 18th and 25th, March 4th, 15th, 18th and 25th, April 1st and 8th, the deaths from plague numbered 27,837, 29,465, 34,139, 45,543, 47,688, 53,895, 57,702, 52,841.

South Africa · East London.—Weeks ending February 25th, March 4th, 11th, 18th and 25th,

April 1st, fresh cases 1, 0, 4, 2, 3 and 5; deaths 1, 0, 3, 2, 1 and 1. *Port Elizabeth.*—Fresh cases 0, 0, 0, 1, 0, 0; deaths 0, 0, 0, 0, 1 and 0.

Mauritius.—Week ending March 16th, fresh cases 1; deaths 1. From March 16th to April 25th no plague.

Hong Kong.—During the weeks ending March 11th, 18th and 25th, April 1st, 8th, 15th and 22nd, fresh cases 0, 0, 1, 2, 3, 1 and 1; deaths 0, 0, 0, 2, 3, 1 and 1.

Penang.—One case reported on March 11th.

Queensland: Brisbane.—During the weeks ending February 18th and 25th, March 4th, 11th and 18th, fresh cases reported 5, 3, 1, 2 and 0; deaths 0, 3, 1, 1 and 0.

Brazil.—From January 1st to March 12th, 1905, the deaths from plague in Rio de Janeiro numbered 40.

Chili.—At Pisagua, a town of 3,000 inhabitants, 150 persons died of plague during the week ending March 4th. Plague is also reported at Tacna and Arica.

Hawaiian Islands.—On March 2nd, 1 case of plague reported at Honolulu.

Egypt.—On March 29th, 3 cases of plague reported, 2 in Kalioubieli, 1 at Minieh.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Indian Medical Gazette," February, 1905.

1. Five Cases of Snake-bite Successfully Treated by the Local Application of Permanganate of Potash. Collected by Leonard Rogers, M.D., M.R.C.P., Capt. I.M.S.

2. Notes on the Presence of Spirilla in a Tropical Ulcer. By Lieut. W. S. Patton, M.B.

3. Plague Rats and Fleas. By W. G. Liston, Capt. I.M.S.

4. Some Clinical Features of Quartan Malaria. By M. Watson, M.D.

5. What Surgical Procedure in Liver Abscess Gives most Chance to the Patient. By Capt. Clayton Lane and R. P. Wilson.

(1) Rogers gives details of five cases of snake-bite treated by permanganate of potash.

Case 1.—Bitten by Russell's viper in thumb, tied ligature round wrist, site of wound incised, permanganate of potassium crystals moistened with water rubbed into wound. The permanganate was applied in less than two minutes after bite, and the ligature kept on for three-quarters of an hour. The patient recovered without subsequent symptoms.

Case 2.—Bitten on forefinger by a cobra. Wound incised immediately, and permanganate of potassium crystals rubbed into wound. [It is not mentioned whether a ligature was applied to the finger or not.] No signs or symptoms occurred.

Case 3.—Bitten on foot by a cobra. Ligature applied just below the knee, wound incised and dry-cupped for ten minutes, crystals of permanganate of potassium applied. Leg shaved, cleaned, and vertical incisions at ¾ in. intervals made up to knee; the leg was immersed in a concentrated permanganate solution for about half an hour, when ligature loosened. No symptoms of snake-poisoning resulted.

Case 4.—Bitten by cobra in right knee. Ligature applied above wound, bite incised, wound washed with a hot solution of permanganate, and bandaged tightly. Three hours later 10 cc. antivenin was injected hypodermically, and repeated an hour later. No symptoms of poisoning developed.

Case 5.—The bite was incised, and permanganate of potassium applied. [The species of snake is not mentioned, nor whether a ligature was applied or not.]

(2) Patton, whilst in charge of the Native Military Hospital at Aden, had an Arab patient with a large ulcer on lower third of left leg. The ulcer was discharging pus, and the whole leg was swollen and indurated. The patient had just recovered from a fever which had lasted four weeks. The patient was emaciated, had pyorrhœa alveolaris, a markedly enlarged spleen, and a slightly enlarged liver. Film preparations from the gums of a case of relapsing fever and from the ulcer mentioned above, stained by Leishman and by carbol-fuchsin, showed spirilla, but no Leishman-Donovan bodies or malarial parasites were found. No difference between these spirilla could be made out, and they also corresponded exactly with *Spirilla buccæ* and *Bacillus busiformis* of Vincent found in films of pus from the gums.

(3) Liston defines plague as a rat disease which is occasionally communicable to man. There are two species of rat: *Mus decumanus*, the brown, or Norway rat, is the common European species, and the *Mus rattus*, the black rat, the common domestic rat of India. The brown rat lives more apart from man than the black rat, and the expulsion of the latter when the brown rat invaded Europe in the 17th century no doubt explains the disappearance of plague in Europe. Plague is likely to spread among men in proportion as *Mus rattus* is more common and *Mus decumanus* less prevalent, and in proportion as men's habits are less or more civilised. The breeding season of rats plays an important part in the spread of plague in man, the young rats being specially liable to be attacked by fleas. The rat-flea in India is the *Pulex cheopis*, but under certain circumstances it attacks other animals. Liston shows how fleas which inhabit by preference one animal will, under stress of hunger, attack other animals, and gives several examples of this: (1) Guinea-pigs dying of plague were found covered by rat-fleas. (2) A room, in which a cat had previously lived, had been shut up for some weeks: the man who went to open up the room was bitten by many cat-fleas—*Pulex felis*. (3) A stable shut for some weeks had previously been occupied by a dog and a horse: the man who opened up the stable was bitten severely by dog-fleas—the *Pulex felis*. In all these cases the hungry fleas attacked the first animal they encountered, whether guinea-pig or man; no doubt had other rats, cats or dogs found their way to the unoccupied rooms the fleas would have pre-

ferred to feed on them and not on the human beings. These observations serve to explain the behaviour of plague in most places where it has appeared. There is (1) plague among rats with many deaths; (2) a lull; (3) then plague among men. Not only can rats communicate the disease to man, but it is equally certain that man can carry the disease to rats. That rats are the important factors in the spread of plague is still further made evident by Liston's observations that rats can live in the same cage with infected rats without acquiring the disease if only the fleas are excluded. The fact that buboes most frequently form in the groin has been advanced as an argument that the germ of plague enters by the skin of the foot, which, in people who go barefooted, is apt to be scratched or excoriated. Against this assumption it is recorded that the boot-wearing people in Australia suffered as frequently from groin buboes as the barefooted natives of India. Liston is of opinion that India can only be freed from plague gradually, and as the people recognise that rats are the most important factor in the spread of the disease. In addition to placing a distance between men and rats, protection can be obtained by acquiring immunity to plague by inoculation.

(4) Watson remarks upon the absence of the characteristic quartan pyrexia in cases of fever in which the quartan parasite was present in the blood. In no less than 60·6 per cent. of the cases observed by him was this the case. In 36·36 per cent. of the cases pyrexia was absent, and in 18·8 per cent. the temperature was normal. Watson draws attention to œdema occurring in many parts of the body, such as the feet, hands, legs, eyelids, abdomen, face, or chest. Hæmic murmurs and tricuspid and mitral valve murmurs were met with. Diarrhœa or dysentery was present in 20·4 per cent. of the cases observed. Infection by pyogenic organisms and preliminary affections are also mentioned by Watson as accompaniments of the fever, and he gives details of several cases of fever with complications, namely, chronic malaria, with great œdema, and death from thrombosis of vessels of right leg; chronic quartan malaria, with cirrhosis of the liver; quartan malaria, with parenchymatous nephritis; quartan malaria, with diarrhœa; double quartan malaria, becoming single; triple quartan malaria, with quotidian fever; chronic quartan malaria, with malarial cachexia; chronic quartan malaria, with renal complications; quartan malaria, with multiple abscesses; double quartan malaria, with chronic dysentery.

(5) Lane and Wilson, of the Presidency General Hospital, Calcutta, condemn the thrusting of a trocar into the liver through the abdominal or thoracic wall in various directions in cases of liver abscess as a relic of barbaric surgery. The procedure, according to the writers, dates from a time when to open the abdomen and examine the contained organs by sight and touch was attended by so much danger that to do so was, except in rare instances, unjustifiable. They entirely discard exploratory aspirations through the abdominal wall, and, instead, they adopt the following procedure:—

"In acute tropical abscess we have found that, as might be expected from experience of an acute abscess in any part of the body, the portion of the liver surrounding the abscess is œdematous, pitting under the finger. If the abscess is large, the whole liver may be œdematous, but in this case the œdema is more pronounced at one spot than over the rest of the organ. Guided by the hand in the abdominal cavity the trocar of the aspirator, entering the liver where this lies under the abdominal wound, is pushed on towards the place where œdema is greatest, and the abscess thus localised without unnecessary laceration of the organ. Our experience in this operation is not yet great, but it has been so entirely satisfactory, and the information yielded has been so precise, that we are not likely to again revert to the older method of blind puncture, with its attendant uncertainties; nor do we consider, judging from our limited experience of the operation, which has included some seriously critical cases, that it entails increased shock and risk; but rather that, by shortening the exploratory part of the operation, it has a contrary effect. We therefore bring it forward here, hoping that others will try it, and confident that the result will not be disappointing."

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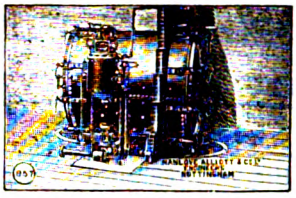
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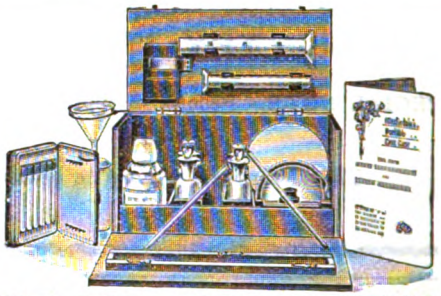


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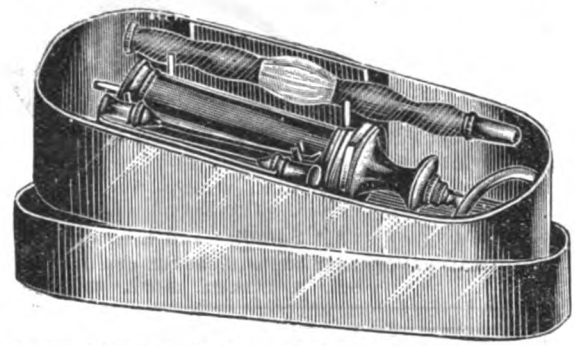
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A NOTE ON YAWS.

By George Pernet.

Assistant to the Skin Department, University College Hospital; late Pathologist, Hospital for Diseases of the Skin, Blackfriars.

Not long ago I had occasion to consult Dr. Victor de Rochas's Paris thesis, entitled "*Essai sur la Topographie hygiénique et médicale de la Nouvelle Calédonie* (1860)" on another matter, and came across the following references to yaws, which may interest readers of the Journal of Tropical Medicine, especially as this French author's work appears to be little known, for it is not mentioned in "Scheube" (English edition by Mr. James Cantlie), Sir Patrick Manson's third edition, and Jeanselme's "*Cours de Dermatologie exotique.*"[1] De Rochas, in speaking of tonga or yaws, states that few natives escape this complaint, which in its external manifestations has some resemblance to syphilis. According to him, at the time he wrote, this disease had not yet been referred to as far as New Caledonia was concerned. It was a kind of frambœsia, he goes on to say, more like yaws than anything else. He studied it very carefully during his stay of three years in the island and examined a large number of cases. The following are his conclusions. The disease attacks children and may develop in any part of the body, but it has a preference for the face, lips, arms and genitalia. It is less frequently observed between the fingers and toes. The mucous membrane of the lips and the scalp are not exempt. All ages are liable to it, but after childhood it is less common. In adults it is rarely observed away from the soles and sometimes the hands. It is frequently confluent in children, but de Rochas never observed confluence in adults.

The early lesions of yaws consist of papules the size of a 20 centimes piece, denuded of epidermis. A serous fluid exudes from the surface, giving rise to a thick, yellow, parchment-like pellicle. Beneath this the surface is bright red, granular and spongy-looking, and except for a faint areola, the surrounding skin is normal. These lesions extend peripherally and coalesce, at the same time becoming more and more raised above the level of the skin. Others, again, only increase in height, looking like half a strawberry, blackberry, or raspberry.

At the angles of the lips and between the toes the lesions become ulcerated and depressed. The ulcerations always present a raised border.

Ulceration is not the usual termination of the disease. When ulceration does not occur, involution takes place without a scar, or at most the scarring is very superficial and ultimately disappears. On the other hand, the ulcerating process may be deep, leading to bad scarring such as is observed in severe burns. The toes or the adjacent parts of the buttocks about the anus may become adherent (*cul collé des indigènes*).

De Rochas also observed a goodly number of ulcers involving the bones, which the natives put down to the same cause, but as he had not seen the beginnings of these lesions he could not give a decided opinion about them. Moreover, the natives gave the name of tonga to all ulcers lasting any time.

The disease is sometimes fatal in children. All children between the ages of 1 and 10 are affected, and the disease attacks them more frequently than it does adults, and the latter more often than old people.

The disease is looked upon as contagious, and de Rochas saw a white man who considered he had contracted it as a result of dressing the wounds of an affected individual.

Tonga leads to enlargement of the lymphatic glands and exhibits features strikingly like syphilis. This may explain why some observers, as, for instance, D'Entrecasteaux, the navigator, have been misled. De Rochas considered it was impossible to admit that tonga was of the same nature as syphilis. The former was rife both where pox was very rarely seen and where it was common. Moreover, he added, the way in which it attacked everybody, especially children, was against such an idea.

With regard to adenitis, that of the groins is very common and often ends in a hideous ulcer occupying the whole of the inguinal region.

In another work which de Rochas published in 1862,[2] he refers to syphilis, stating that it was more or less rife on the coast, being very common in those places frequented by sailors, but rare in other parts. He added that tonga or yaws was rife both where lues venerea was very rare and where it was most common, children being particularly attacked by tonga. This, he considered, sufficed to differentiate it from syphilis. He thought that tonga took the place of small-pox among the natives, who were exempt from the latter disease.

It is generally admitted at the present day that yaws and syphilis are two different diseases.

I have examined histologically parangi lesions which were handed to me by the late Sir William Kynsey. They differed from the syphilitic granuloma in several respects.

In my opinion the frambœsial lesion is probably merely the result of secondary microbial invasion from without. This is borne out by the histological appearances which I have found, viz.: marked downgrowth of the epidermal interpapillary processes, accompanied by an imperfect development of the cells of the horny layers (parakeratosis) leading to the formation of a stratified crust, the component parts of which are held together by micrococci, leucocytes and exudation. This view receives confirmation also from the statement made by one observer, that if the primary papulo-necrotic eruptive elements be not subjected to irritation, they involute spontaneously.

[1] British Museum Press, mark 7373, c. 16.

[2] "*La Nouvelle Caledonie et ses habitants*," 1862, British Museum, 10492, a. 3.

Plague.

India.—The deaths from plague in India during the week ending April 15th, numbered 51,786. In the Punjab and United Provinces the numbers were 23,942 and 15,884 respectively.

LEPROSY AND CHRISTIANITY.

By Arthur Neve, F.R.C.S.E., &c.
Hon. Superintendent, Kashmir State Leper Asylum.

I.

It was Mr. Jonathan Hutchinson who, in 1903, writing to the *Times*, bracketed the words {Leprosy / Christianity} with an etiological significance. At a subsequent meeting of the British Medical Association, an unusual number of experts being present, it was evident that the tribunal of medical opinion does not endorse Mr. Hutchinson's fish theory, and hence the alleged connection between Christianity and leprosy rests upon an unproven theory. It might have been expected that many missionaries would at once have answered charges published in such an influential journal, and one or two did so; but others felt that an opinion brought forward by one of Mr. Jonathan Hutchinson's formerly high professional reputation should be treated with respect, and required that a careful examination should be made into the facts, more especially those concerning India and the missions there.

The editor of *Medical Missions in India* (January, 1904) wrote: "Of course the explanation of the theory will at once occur to anyone who knows anything about mission work among lepers, that it is due to the large number of lepers who have become Christians, but it seems almost incredible that a scientific man with Mr. Hutchinson's reputation should have fallen into such an obvious fallacy." Yet, this is indeed what he has done. In the same journal I asked for a wide investigation of the following points.

(1) *Of the Christian inmates of asylums what number were Christians before they were lepers?*

It has been found that in Northern India less than 5 per cent. were Christians before they became lepers, and that only one or two cases could be found in the whole of Northern India in which adult converts a few years later became leprous.

The census report for 1901 states that "Manbhoom and the Santal Parganas show a much wider diffusion of leprosy than in 1891."

It is known that Christianity is making good headway among Santals, so it might be thought that here, at any rate, is an instance suggestive of connection. There are now some 18,000 Christian Santals, but what are the facts? The Rev. Dr. Campbell, a missionary of thirty-one years' experience, has never known of a Christian becoming a leper. Yet Manbhoom has 15·3 lepers per 10,000 of population. Evidently, then, this large and increasing number occurs among those who are non-Christians.

Again, Chota Nagpur may be quoted as an instance of simultaneous increase of Christianity and of leprosy, but on investigation we find that although there are 80,000 Christian kols in Chota Nagpur we can hear of none who are now lepers and were Christians before they were lepers. Mr. Hutchinson himself visited Purulia Asylum and it is very remarkable that he did not then discover two salient facts—

(*a*) That of the many (503) Christian inmates all became converts after they were lepers.

(*b*) That there are no Roman Catholics among the Christian lepers.

The Protestant missionary who has been superintendent of that asylum since 1886 and who has been a missionary for thirty-four years, states categorically: "I never had a Roman Catholic convert in the asylum. I know the Roman Catholic converts in the Ranchi district very well; I have travelled a great deal annually and have visited hundreds of villages in which there are Roman Catholic as well as other converts. Well, I do not remember having ever met with a leprous Roman Catholic."

To the same effect I have the written statements of Roman Catholic priests working in those districts, Khunti, Torpa, Ranchi, Mandar, Gumla, Sarwada and Katkahi, with an aggregate of 38,500 converts, and amongst them there are 7 lepers, *all of them leprous before baptism.*

Evidently in this district also any increase of the disease is among non-Christians.

In a recent tour through India from Kashmir to Ceylon I visited many missions and leper asylums, and made careful enquiries, with the result of ascertaining altogether less than six cases in which leprosy had developed subsequent to baptism as adults.

(2) *What percentage of Christian lepers are in asylums and what of Hindu lepers?*

Not more than 1 per cent. of Christian lepers live out of asylums, so that all Christians who are lepers are registered as such. It cannot be said with any certainty what percentage of non-Christian lepers are out of asylums. It would seem certain that there are at the present time less than 10,000 inmates in all the leper asylums in India, and that this does not represent *one-tenth* of the total number of lepers.

So that statistics of leprosy classed according to the religion of asylum inmates are very misleading. In fact, all the census statistics are unreliable for purposes of comparison, as has been pointed out by Sir Lepel Griffin, Mr. Wellesley Bailey and others.

We have no reliable evidence that leprosy is upon the increase. Any apparent spread since the census of 1891 probably indicates that the census in 1901 was more thoroughly taken.

When we consider these two points, we see that the actual incidence of leprosy among the Indian Christians, apart from those converted as lepers in asylums, is very far below the average for India. Taking Mr. Hutchinson's own instance, the Punjab, where there are 39,000 native Christians, apart from those actually converted in asylums, I can only discover one case of leprosy, which gives only ·25 per 10,000; or among 80,000 Christians in Chota Nagpur, deducting 7 adults known to be lepers when baptised, none have subsequently developed leprosy, = ·0 per 10,000.

Dr. T. M. Nair has effectively shown that as regards the Madras Presidency, Mr. Hutchinson makes a lamentable misstatement when he says: "The Indian Jain, who is a vegetarian, almost absolutely escapes leprosy, while the Catholic suffers fearfully."

In Madras there were 27,485 Jains, of whom 14 were lepers = 5 per 10,000, as against 4 per 10,000 among Christians, this last figure being certainly in excess, as I have shown above that many of the Christian lepers became lepers before conversion.

Brahmins also are, or should be, strict vegetarians,

but Dr. Nair has shown that among them also leprosy exists in the ratio of about 4 per 10,000.

There can be no illumination by shutting our eyes to the great facts of the case as regards India. In a general way it may be thus stated, that in India out of a total of about (or over) 100,000 lepers, not over[1] 800 were Christians when their disease first appeared; of these the great majority are Roman Catholics. It may be fairly asked, if the Roman Church is responsible for these 800, who is responsible for the remaining 99,200? Or what has the Roman church to do with the 100,000 lepers in China, or 100,000 in Japan?

Similar facts like those regarding the Salsette Christians will fall into their proper perspective when we are able to explain many other endemic instances not among Catholics, as, for example, 17 lepers on Minicoy (a ratio of 150 per 10,000) among Mohammedans, but there are four other islands in the Laccadives which are quite free from the disease.

As a matter merely of logic, it is difficult to follow Mr. Hutchinson. He attributes the "terrible sufferings" of the Catholics to the use of fish on *fast* days; but the only instances he adduces which can stand investigation are those of fishing populations which habitually eat fish *every* day of the week, as all their progenitors did, and as Indians of all religions all round the coast of the great peninsula or of Ceylon still do.

I hold no brief for the Romanists, but I maintain that it would be erroneous to assert that native Christians connected with the Roman Church eat more fish than the corresponding communities, whether low caste Hindus or Buddhist, or Animist from which the Christians originally came, or from among which they are still being recruited. In many inland parts it is certain that fish is a rare luxury and one not to be thought of on fast days.

Another thing, too, may be definitely asserted, both of Protestant and Romanist Christians, that their diet in 99 cases out of 100 remains quite unaltered. In the hundredth case, by means of better education, the social status is improved and a larger income is earned, so that the general conditions of life become more favourable. It may indeed be stated generally that the surroundings of Christian communities are less insanitary than those of their non-Christian neighbours and that they are far more amenable to the influences of Western civilisation, and that this is no unimportant matter in the prophylaxis of a disease like leprosy.

SOME NOTES ON THE FISH THEORY OF LEPROSY.

By Arthur Neve, F.R.C.S.E.

II.

In 1903 I was on special duty in the district around the Wular Lake in Kashmir. I then realised to what an extent fish is eaten by the people. In going through many villages I had to pick my way among fish laid out to dry amidst the filth of the village. The weather was damp and close, and the fish appeared to be all in a semi-decomposed state. In some villages fish-curers exposed them on a framework to the action of sun and air, and some of them were smoked, but hardly any salt was used, for it is extremely expensive in Kashmir.

The dried fish are sent into Srinagar, where they are largely consumed by Hindus and Mohammedans. Fresh fish and partly cured fish are largely eaten by the villagers and peasantry around the lake and the main streams flowing into it.

My duties brought me into close contact with thousands of people as I went from village to village, and hut to hut administering flood relief.

Here, then, was an ideal ground for leprosy *if the fish theory were true*. I found two cases of leprosy in the whole district. I subsequently examined the records of the State Leper Asylum for the ten years 1893 to 1903, and ascertained that a total of 8 lepers had been at various times received as leper patients coming from those districts, the whole population of which might be approximately estimated at 25,000. Probably, at no one time would it be possible to find more than six lepers in it.

Three short marches to the west, crossing a low pass, we come to the mountain valleys of Karnal, the upper parts of which are forests and steep grassy hillsides, while lower down there is a little maize cultivation scattered about the slopes. The people are herdsmen, and in the summer following their cattle they live in the rough sheds high up in the mountain pastures. Their staple food consists of coarsely-ground maize, made into unleavened cakes; with large quantities of curds and some buttermilk; occasionally also they get goats' flesh.

The total population of the various hamlets and encampments in the valley cannot exceed 2,000 or 3,000; but the number of lepers is large, very probably thirty, of whom a large proportion have been to the State Leper Asylum at some time or other.

There is no reason to suppose that these people ever eat fish; perhaps in autumn a few might be caught in pools as the streams get low. It would be their one chance in the year.

We endeavoured to make a map which should show the distribution of leprosy in the Western Himalayas.

Along the populous villages of the alluvium, or the fertile plateaux, there would be one case here, another there, at wide intervals; in upland hill-villages, or narrow side ravines, here and there a few cases, perhaps connected with one another, might cluster together, as in Karnal above described, or near Rajaori, or in Kishtiwar, where the conditions are very similar.

In my experience it is rare to find an absolutely isolated case of leprosy. On careful investigation it is usually found that some relation or neighbour has had the disease. This may be stated statistically, that the incidence of the disease among relations up to the second degree is about 5 per cent., while in the general population it is only about 4 per 10,000.

In the course of a prolonged recent tour through India, I have found a distinct consensus of opinion against the fish theory at places like Taran-Varan,

[1] Wellesley Bailey, Esq., says: "In our asylums we have 7,349 lepers, of these 3,153 are Christians; *our* Christian lepers are *practically all converts*."

Dehra-doon, Mandla, Santalia, Purnlia, Calcutta, Madura, Neyoor, and Colombo.

It would take far too much space to enter into a discussion of the local reasons adduced. But a belief in some form of commensal contagion seems equally wide-spread, and is gaining ground.

There is at the present time a family in the Kashmir State Leper Asylum with the following history. When the youngest boy was a baby the father developed leprosy in a severe ulcerating form, and he died two years later.

About this time one after another of the four children developed tubercular leprosy, and last of all the mother in a very mild anæsthetic form. Fortunately, such cases are rare, but they throw light on the possibility of what looks like virulent contagion, though the possibility of another explanation cannot be overlooked.

The fact cannot be gainsaid that not only at Kashmir, but in many parts of the coast of India, there are fish-eating communities in which leprosy is comparatively rare; while there are other districts in which leprosy is abundant, but fish are rare.

Another consideration is that large quantities of cured or partly cured fish are transmitted into large towns such as Srinagar. Who consume this? Apparently, middle-class Hindus and Mohammedans, amongst whom leprosy is extremely rare.

So, too, Ceylon imports 295,000 cwt. of cured fish per annum. In such a climate much of this must speedily become tainted, but where is the leprosy caused thereby?

At Hendala Asylum, the finest and best managed I have seen anywhere, I made careful enquiries as to this.

It is generally felt in Indian asylums that Mr. Jonathan Hutchinson, acting on preconceived notions, has rejected as unreliable the witnesses against his theory; that there are few localities where any modification of the fish theory covers all the facts, and many places where it is in opposition to most of the facts.

"Thèse de Lyon," 1904.

Actinomycose de l'oreille (Actinomycosis of the Ear). By George Vielle.

The external ear is rarely affected, though sinuses may pass from the surface, and are often associated with œdema of the neck.

The middle ear may be invaded from the pharynx where the first symptoms are noticed, or it may be due to disease of the jaw. Middle-ear disease may be due to an invasion through a perforated membrane. The symptoms are those of a slow otitis media. Complications, as mastitis, rupture of the membrane, facial paralysis, caries, and meningo-encephalitis, are usual.

The diagnosis can only be made by microscopic examination of the pus. The prognosis is serious on account of the liability to complications.

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THE

Journal of Tropical Medicine

MAY 15, 1905.

LIVINGSTONE COLLEGE.

THE Principal of Livingstone College, Dr. Harford, has issued invitations for the Commemoration Day Proceedings at Livingstone College, Leyton, E., for the afternoon of Tuesday, May 23rd. The College exists for the purpose of giving instruction in the elements of medicine and surgery to men who are already missionaries or who are preparing to go forth as missionaries, mainly to isolated posts, and the larger number to tropical climates.

We can testify to the excellence of the work carried on at the College and hope to hear that the appeal for the small sum of £1,000, by May 23rd, will be responded to many times over. A cordial supporter of the College has promised £200 provided £1,000 can be raised by Commemoration Day, and of this sum £550 are still required.

The Livingstone College fulfils a valuable and unique function; it is the only institution in the world specially devoted to the training of missionaries in the elements of medicine and surgery. How necessary is this training it is needless to dwell upon and impossible to exaggerate the importance of. Missionaries' lives in tropical countries are passed in

regions, as a rule, far removed from the possibility of obtaining the services of medical men, especially in cases of sudden illness, either for themselves, their wives and children, or for the natives under their charge. It is for the purpose of teaching "first aid" in illness on a sound and scientific basis that the College exists, and very efficiently and thoroughly is this duty fulfilled. All who have any regard for the souls and bodies of their fellow-creatures must feel an interest in the work of the College, and we would urge all who can to apply to the Principal for admission cards to visit the College on May 23rd and personally become acquainted with the work being accomplished at this admirable institution.

WESTERN MEDICINE IN CHINA.

The work of the various missionary societies in China in spreading the teaching of Western medicine amongst the Chinese has never been so active as now. The China Medical Missionary Association has recently devoted attention to the translation of several standard works into Chinese and, with the assistance of these, teaching has been much simplified, as many of the pupils are entirely ignorant of English. Dr. Philip R. Cousland, of Chao-chow-Fu, near Swatow, has translated Halliburton's "Handbook of Physiology" into Chinese, and the illustrations of the book have been executed by Chinese workmen in Shanghai.

We congratulate Dr. Cousland upon the completion of an ardous task which he has done admirably, and it is hoped that other medical works translated into Chinese will soon be ready for publication.

LONDON SCHOOL OF TROPICAL MEDICINE.

Dinner at the Hotel Cecil, London, on May 10, 1905.

The Right Honourable Joseph Chamberlain, M.P., in the Chair.

The great gathering at the Hotel Cecil on May 10th, under the presidency of Mr. Chamberlain, was instrumental in raising a sum of over £10,000 on behalf of the funds of the London School of Tropical Medicine.

The Dinner Committee consisted of:—

Chairman—His Grace The Duke of Marlborough, K.G.; The Right Hon. Lord Brassey, K.C.B.; The Right Hon. Lord Strathcona, G.C.M.G.; Sir Donald Currie, G.C.M.G.; The Right Hon. Lord Rothschild, G.C.V.O.; Perceval A. Nairne, Esq.; Admiral Sir Richard Tracey, K.C.B.; Sir John Craggs, M.V.O.; Commander G. Hodgkinson, R.N.; Sir Patrick Manson, K.C.M.G., F.R.S.; H. J. Read, Esq. *Honorary Secretaries*—Wm. Waldorf Astor, Esq., and Sir Ralph Moor, K.C.M.G.

The following were present at the dinner:—

Adam, A. Chivas; Adams, Walter; Adamson, A.; Adamson, W.; Alexander, Dr. Wm.; Anderson, Dr. John, C.I.E.; Andrews, General Avery D. (U.S.A.); Angier, Sir Theodore, V.C.; Annan, John; Arbuckle, The Hon. Sir Wm.; Armour, P. W.; Arnhold, H.; Arthur, Col. A. M.; Arthur, Sir George, Bart.; Aspinall, Algernon E.; Astley, Thurlow; Atkinson, Dr. T. R.

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After the loyal toasts had been drunk—

Mr. CHAMBERLAIN, in proposing "The London School of Tropical Medicine," said that he thought they would be inclined to agree with him that attendance at a great public banquet of that kind, or, at all events, any inordinate addition to such festivities, was really inconsistent with the position of advocate and supporter of preventive medicine; but, although on that account he had felt bound to decline very numerous invitations from too hospitable friends, he could not resist the temptation to repeat the experience of six years ago, when he presided at a similar banquet, and when they established that school. Now he came back to them to rejoice in their past success, and to provide for their future. His interest in that great question was unexhausted, and, indeed, unabated. It was a privilege as well as a duty to be in any way associated with it. It was a privilege, because he could not himself think of any subject of scientific research and philanthropic enterprise which was more interesting, and it was a duty which we owed to the Empire from which we could not divest ourselves, whatever our political opinions might be. Although his own experience convinced him that in this country it was very possible to affix political stigma to the most incongruous questions, this work of mercy, at all events, would be an exception. However violently we might be opposed on political matters, we could join hands in this useful work. This duty had increased in recent years with the continual extension of our territory, with the increase of our scientific knowledge and our opportunity, and also with the awakening of our Imperial conscience. We owed this duty to the vast population for which we had gradually made ourselves responsible. We owed it still more to those of our own race who were daily risking health and life in order to maintain the honour and the interests of this country. Our territory expanded, and, although some time it must come to an end yet at present it had been unending. There were those who, no doubt, took exception to a particular policy, but, if they themselves were responsible, as perhaps they might be, they would find that there was something stronger than their will, that there was a destiny which drove us forward. Within the last half century Africa had been disclosed to the world, and, in what had been called the race for Africa, it was impossible that we should not have our share. Competition in what Lord Rosebery once called the pegging out of claims for territory and markets went on. He did not think that any one, even the most convinced little Englander, would feel that it was possible for his country to keep entirely out of the running.

BRITISH INFLUENCE AND ADMINISTRATION.

But there was an influence at work which drew us even further. We approached a new country.

We established a protectorate or a sphere of influence —which generally meant a sphere of no influence— and we thought we could stop there, we thought we could take the business up again when we pleased. In practice we found that that was impossible. Where the British flag was planted there must be established the British peace, and barbarous methods must be abolished, and law and order substituted for anarchy. We were unable, therefore, to stay where we began. Whatever the beginning, we must go on until something like rough justice and order had been introduced into the territory for which we were responsible. Hence many little wars, much to be regretted, but after all to be taken into consideration in connection with their result. The balance was a balance of good, and for one wrong that might have been committed enormous benefit had been conferred upon the people. Let them compare the position of Egypt as it was a quarter of a century ago with the Egypt of Lord Cromer (cheers), which was the envy for its prosperity of every country in the world. Let them look at the case, perhaps even more extraordinary, of the Sudan, or of Nigeria, a great empire of immense size and fertility and wealth, yet almost distracted by the existence of the slave trade, by the brutalities of petty tyrants, by the base superstition which prevailed, and under the wise control of men like Sir F. Lugard, Sir R. Moor, and he would add the name of Sir W. McGregor, whose country was very near to Nigeria, that country had made wonderful progress, and we could see no limit to the prosperity it could attain. (Cheers.) Lives of Britons had been lost there and considerable numbers of natives had been killed, but if they took every life lost in the whole series of those campaigns it would not approach to more than a fraction of the number of the native population that were destroyed every year before our advent. By whom had that work been done? These miracles had been wrought by a mere handful of men, mostly very young, brought suddenly into the presence of great responsibilities, having to deal with crises of administration, of disease, of savage aggression—every problem of statesmanship. They had risen to the occasion with a courage and a resolution and a resource which proved that we still had among us the children of those who had gone before, who had presided over the infancy of the Empire, and that they still possessed those ancient qualities which had made our nation great.

Disease and Climate.

If they were only a handful, they were the best. Did we not owe something too, we who remained at home, we who profited by their services? The worst conditions they had to meet were the new conditions of formerly unknown disease, conditions of climate which had always been so fatal to Europeans. In the progress of this great world discovery the pioneers had suffered from our ignorance of the new conditions they would have to face, and our inability to deal with them. Many of them had left their health and their lives behind them. It was true of the Tropics, as it was true of some of our temperate colonies, as Kipling said in his "Songs of the English":—

"On the sand-drift, on the veldt side, in the fern scrub we lay,
That our sons might follow after by the bones by the way,
Follow after, follow after, we have watered the root,
And the bud has come to blossom that ripens for fruit."

We knew that some of these sacrifices must be faced. It was a necessity of the part we had to play: but it would be pitiable, it would be shameful, if we allowed these sacrifices to grow for want of any preventive precautions upon our side. Our first duty was to do all that was in our power in order to reduce this blood tribute that we paid to the Empire, to reduce it to the uttermost. M. Pasteur, he supposed, laid the foundations for all the recent work of scientific research, and the work had been continued both abroad and at home by men whose names would be remembered among those of the greatest of our philanthropists and men of science. In connection with the work of dealing with tropical disease, we should never forget the names of Sir Patrick Manson, of Major Ross, of Leishman, and Professor Haffkine, and many others.

The Schools of Tropical Medicine.

He thought we owed first to Sir Patrick Manson the idea of a tropical school which should co-ordinate all this knowledge and give it practical effect. Almost abreast with him, if not before, came the promoters of the Liverpool School. There was room for all in that work. He was sure they entertained no jealousy; on the contrary, they welcomed the success of that competition, and they congratulated the Liverpool School on the success they had already achieved. There was only one thing he thought he envied them, and that was the liberality and the energy of their citizens. He wished that in every other institution such as that they could have a man as energetic, as devoted as Sir Alfred Jones. He wished they could have a community as generous as that of Liverpool had shown itself. They raised something like £40,000 by private subscriptions, and money still poured forth there whenever there was a sufficiently satisfactory subject for its expenditure. Why could not London, the metropolis of the Empire, the metropolis of the world's commerce, emulate more frequently the generosity of a provincial city? The London School was provided at a cost of £30,000, a considerable portion of which was provided by Government and Colonial assistance, some by private subscription, and some, unfortunately, had to be provided by loan. It held accommodation, in the first instance, for twenty students and six residents. Since that time the accommodation had been increased. Altogether 503 students had passed through the school, 233 sent by Government, 157 private students, fifty-nine foreign students, and fifty-four missionaries. That classification, and especially the last figures, would suggest how much devotion and unselfish zeal there was in those who went to those countries at all risks to themselves in order to give comfort and religious instruction to the inhabitants. We were still in the beginning of this enquiry and of these operations. The results in regard to malaria and yellow fever had been more than striking. Elephantiasis, sleeping sickness, beri-beri, and other plagues, which, though only become known to us in recent years, up to this

time had wrought havoc among the native populations in which they existed, were being investigated. For some of the expeditions sent out we had to thank private benefactors, otherwise they would have been impossible. They had to thank Sir J. Craggs, and they had to thank specially Mr. Bomanji Petit, a Parsee gentleman, who, with a munificence characteristic of his community, had contributed £7,000. Still more were they grateful to those who had taken part in these expeditions, not concealing from themselves what they involved. They were in many cases more dangerous than war, surely they were not less honourable. First, Mr. W. Myers, and now, recently, Dr. Dutton, both distinguished men of science, both given up to the pursuit of this research, had fallen victims to their unselfishness. They were true martyrs to science and to humanity. How should we honour their memory? What statues or monuments should we erect? Surely there could be no better expression of our feeling than to enable the work to which they gave their lives to be continued and extended. The London committee asked for the sum of £100,000, and, if he might make a comparison between London and Liverpool, it was a mere drop in the bucket in comparison with the Liverpool subscription. They asked for £100,000 to repay the debt, make a proper provision for the teaching in such a teaching institution as that; above all, to subsidise the research into these diseases of every kind. He confessed it seemed to him that there could not be a more desirable application of superfluous wealth than to enable that institution to unite the work of the investigator and the work of the physician, which was, after all, the ideal union between scientific enquiry and its practical application. He asked them to sympathise with those workers of our Empire who had already done so much to secure its renown, and who had contributed, and were contributing, to the happiness and welfare of the vast populations which we had governed together under the protecting influence of a single flag.

Sir Patrick Manson, in response to the toast, enumerated some of the more important work done by the School. He stated that over 500 students had taken out a course of study at the School since its foundation five years ago. The accommodation of the school had been doubled during the past twelve months, new laboratories and additional residental chambers having been added to meet the ever increasing demand for instruction in Tropical Medicine. Of the many scientific investigations undertaken by the school, Sir Patrick referred to the elucidation of the Mosquito-Malaria theory by an expedition to the Roman Campagna, and to the importation of malaria infected mosquitoes to this country causing malaria by their bites. Our knowledge of filariasis had also been advanced by Dr. G. C. Low, the Superintendent of the School, who, whilst a student at the School, recognised the embryo of the filaria embryo in the proboscis of the mosquito, and thereby confirmed, as far as it possibly can be, the well-rooted belief that the disease is caused by the direct introduction of the filaria parasite into the human being. In Uganda, Dr. Castellani, whilst engaged in the work of an expedition sent out under the auspices of the School, found the trypanosoma in the cerebro-spinal fluid of cases of sleeping sickness, and thereby laid the foundation of our knowledge of sleeping sickness. Sir Patrick cited several other important additions to our knowledge of Tropical Medicine made at the School and by students who have studied there, and maintained that the School has amply justified its establishment and the funds that have been placed at its disposal. Many questions remain to be dealt with, and all that was wanted was money whereby opportunity would be afforded to investigate the many scourges which were responsible for the suffering and untimely death of our fellow-subjects in many countries under the British flag.

The Right Hon. Alfred Lyttelton, the Secretary of State for the Colonies, said the Empire was held at a great sacrifice of British lives, and it was to reduce this blood-tribute that the Schools of Medicine in London and Liverpool were called into existence. A more noble work could not be conceived, and both Schools were nobly fulfilling their part in the work of the Empire. Although much had been done we were as yet only at the threshold of our task. To send men to take part in the government of certain of our Colonies had hitherto meant loss of health or of life, and it was with feelings of sorrow on many occasions that we parted with them to take up their duties in these Colonies, knowing well the dangers they were exposing themselves to. Every home-dweller in these islands benefited directly by the sacrifices made by these brave men, and the least we could do was to minimise the dangers they ran by contributing to a fund, the object of which was to investigate the nature of the diseases to which they were liable, and to thereby help to alleviate the evils which these diseases gave rise to.

Lord Strathcona, G.C.M.G., who responded to the toast of "The Empire," said that although Canada was far removed from the Tropics, it behoved all subjects of the King, wherever their lot was cast, to do what they could to ameliorate the sufferings of the Europeans and of the natives within the British dominions.

His Grace the Duke of Marlborough, K.G., proposed the toast of the Chairman, Mr. Chamberlain. In his official capacity as Under-Secretary of State for the Colonies he was in a position to state from intimate knowledge in how great esteem Mr. Chamberlain was held throughout the British over-sea dominions. Personally, he regarded it as a great privilege to have been associated with so eminent a statesman in the Colonial Office, and he hoped that Mr. Chamberlain would be spared for many years in health and vigour, so that he might have the satisfaction of forwarding the many problems of State which he had at heart.

"Rousskey Vratch," St. Petersburg, vol. ii., No. 48.

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No. 8.—Gambia. Medical Report for the Year 1903 (*Continued*).

An ordinance amending the Public Health Ordinance is now in force for the prevention of the tethering of cattle in the streets for grazing, and the result is that the streets are now almost quite free from goats and horses, &c., which were not alone dangerous obstructions to persons walking or driving, but also attracted insects and produced in other ways an insanitary condition of the town.

The attempt made about two years ago to cover the public wells has turned out a failure, as the covers were made too heavy and constructed on a wrong plan, the result being that they are removed altogether from the wells, which are left open as before.

From the result of our experience of a French pump fixed to a well in Hagan Street I am able to recommend that all public wells be fitted with this model and permanently covered either with corrugated iron or concrete, on the same lines as those followed lately at Lagos. In the dry season at Bathurst, owing to the prolonged drought, open wells become the chief haunts of mosquitoes and other insects, and are to a large extent responsible for the propagation of the former pests in that season, as there are no pools or stagnant water in the town to act as breeding-places for them.

Anti-Mosquito Sanitation.

This was kept up steadily during the year, a special gang of ten labourers being employed for the work, which consisted in the collection and removal of old tins, broken bottles, &c., to be disposed of by burial in the waste lands adjoining the town, and the levelling up of depressions and useless ditches in the town.

Before the rainy season set in, the levelling up and clearing of the grass drains was taken in hand, and it was found necessary to take on ten extra labourers in order to complete the work before the heavy rains commenced. This made a great improvement in the condition of the streets in which these drains are, and there were no stagnant pools remaining, the excess of rain-water flowing rapidly away. These drains require much attention during the rainy season, as they become choked up after every shower by the loose sand washed down from their sides, and from the rank grass and weeds that so rapidly shoot up in their courses.

It is very necessary that they should be put in thorough repair, a month or two before the rains begin, by being properly levelled, and opened up at all the crossings.

The inspector of nuisances continues his bi-weekly inspection of all gardens, yards, and compounds, and reports to me daily the result. Wells and other water receptacles are examined for mosquito larvæ, and a strict watch kept on them to see that they are always kept covered. The public wells which are in the charge of the Board of Health are not, I am compelled to say, a model for the owners of private wells in this respect.

Vaccination

In Bathurst.

In the town of Bathurst vaccination was only carried on from June to November owing to the illness of the Public Vaccinator. In this period there were 378 children operated on with 271 successes. Vaccine on ivory points was the variety used; the lymph supplied was not very active, the majority of the successes being obtained from arm-to-arm vaccination. With a special supply of experimental lymph I had only 50 per cent. of successes.

In the Protectorate.

The Protectorate Medical Officer vaccinated 60 people, of whom only 30 were successful. He was stationed at Sallikeni, on the north bank, for three months, where the people strongly objected to being vaccinated, and could not be persuaded to undergo the operation. Two of the Commissioners were supplied with lymph, but no record of results was kept by them.

1903.

Meteorological Return for the Year.

Months	Temperatures						Rainfall		Winds		
	Solar Maximum	Minimum on Grass	Shade Maximum	Shade Minimum	Range	Mean	Amount in Inches	Degree of Humidity	General Direction	Average Force	Remarks
Jan...	160	—	93	56	37	71·9	—	—	N.W.		
Feb.	160	—	100	60	40	75·3	—	—	N.W.		
Mar.	164	—	100	61	39	76·5	—	—	N.W.		
April	160	—	93	64	29	75·2	—	—	N.W.		
May	165	—	88	67	21	75·4	—	—	N.W.		
June	160	—	89	69	20	79·2	5·91	—	Variable		
July..	165	—	89	68	21	79·0	7·13	—	Variable		
Aug.	159	—	89	70	19	79·3	35·87	—	Variable		
Sept.	160	—	89	67	22	79·4	4·15	—	Variable		
Oct...	162	—	91	67	24	79·7	4·07	—	Variable		
Nov.	165	—	92	63	29	79·0	—	—	E.		
Dec...	157	—	89	57	32	73·1	—	—	E.		
Total	1937	—	1102	769	333	922·8	57·13	—			
Monthly Average.	161·4	—	91·8	64·0	27·7	76·8	11·4	—			

Not observed.

No. 9.—BRITISH GUIANA.

Medical Report for the Year ending March 31. 1904.

By J. E. GODFREY.

Acting Surgeon-General.

THE following report of the Medical Department for the financial year from April 1st, 1903, to March 31st, 1904, for the consideration of his Excellency the Governor:—

The Surgeon-General, Sir D. Palmer Ross, M.D., C.M.G., went on leave on December 28th, 1903. Doctor Widdup, acting medical inspector, acted until my return to the colony on January 13th, 1904, when I was appointed to act as surgeon-general.

The usual financial and statistical returns, reports from the medical officers in charge of public institutions and districts, a special report from Dr. Teixeira on the cases of small-pox treated at the Isolation Hospital, "Best," and the report of the Government veterinary surgeon, are attached to this report.

II.—PUBLIC MEDICAL INSTITUTIONS.

These institutions have been worked satisfactorily and economically during the year.

The following table shows the number of in- and out-patients treated at all institutions, with the exception of the lunatic and leper asylums, there being a decrease of 7,050 as compared with last year:—

Institution	Beds M.	Beds F.	Beds T.	In-patients	Cured	Relieved	Not Relieved	Died	Remaining, April 1, 1904	Out-patients
Public Hospital, Georgetown	466	234	700	12,952	2,095	8,543	557	1,192	565	40,317
,, ,, Berbice	107	43	150	2,438	717	1,179	222	312	123	16,843
,, ,, Suddie	54	26	80	1,409	246	899	37	169	58	6,961
,, ,, Bartica	24	11	35	252	138	73	8	26	7	439
,, ,, Morawhanna, including Arakaka Ward and Dispensary ..	20	12	32	566	207	245	50	29	10	2,629
Total	671	326	997	17,617	3,403	10,939	874	1,728	763	67,189

N.B.—This Table does not include the number of in-patients remaining on March 31st, 1903.

	In-patients	Out-patients	
1895-96	12,518	38,215	8,666 increase.
1896-97	12,893	46,881	9,401 ,,
1897-98	15,086	56,413	11,725 ,,
1898-99	14,297	75,356	18,064 ,,
1899-1900	11,028	64,460	14,075 decrease.
1900-1901	12,118	53,497	9,873 ,,
1901-1902	13,370	70,410	18,165 increase.
1902-1903	15,410	76,446	8,076 ,,
1903-1904	17,617	67,189	7,050 decrease.

The reports and statistical tables from the medical officers in charge of these institutions are attached to this report, and show the satisfactory work performed by each of them.

I take this opportunity of placing on record the assistance I received in the management of these institutions from the medical officers in charge.

A.—Public Hospital, Georgetown.

Additional ventilation was provided in several of the wards. A good deal remains to be done in this direction, but this will have to be carried out gradually.

The latrines attached to B and C Wards have been almost entirely rebuilt, much to the advantage of the institution and the comfort of the patients.

The Röntgen ray apparatus has arrived, and will, I hope, be in full working order in a short time.

The resident surgeon's remarks in his report on the prevalence of ankylostomiasis are to the point, and are well worthy of consideration.

Of the total deaths, 411, or 34 per cent., died within 72 hours of admission.

I am very pleased to have to again record a low death-rate. This has gradually fallen from 14·2 per cent. of the cases treated in 1890 to 9·2 per cent. in 1902-03. In 1890 the number treated was 8,566, with 1,216 deaths. In 1903-04 there were treated 12,952, with 1,192 deaths,

The net cost (medical attendance excepted) per caput was 25·9 cents per diem, which is slightly higher than last year.

The total expenditure for the year was $66,106·39, against $65,345·20 for the previous year; and the revenue $6,224·22, against $8,825·81.

B.—Public Hospital, New Amsterdam.

There were 312 deaths out of 2,438 in-patients, which gives a death-rate of 12·1 per cent. on cases treated.

Of the total deaths, 105, or 33·6 per cent., died within 72 hours of admission.

The net cost (medical attendance alone excepted) per caput was 36 cents per diem, which is less than last year.

The total expenditure for the year was $19,461·77, against $18,021·23 for the previous year; and the revenue $2,034·29, against $1,339·99.

C.—Public Hospital, Suddie.

There were 169 deaths out of 1,409 in-patients, which gives a death-rate of 11·8 per cent. of the cases treated.

Of the 169 deaths, 57, or 33·1 per cent., died within 72 hours of admission.

The net cost (medical attendance alone excepted) per caput was 32·1 cents per diem, which is more than last year.

The total expenditure for the year was $7,860·87, against $7,734.99 last year; and the revenue $331·71, against $230·69.

D.—Public Hospital, Bartica.

There were 26 deaths out of 252 in-patients, which gives a death-rate of 10·3 per cent. of the cases treated.

Of the 26 deaths, 13, or 50 per cent., took place within 72 hours of admission.

The net cost (medical attendance alone excepted) per caput was $1·13 per diem, which is higher than last year.

The total expenditure for the year was $2,136·99, against $2,003·86 for the previous year; and the revenue $59·96, against $48·27.

E.—Public Hospital Morawhanna, and Arakaka Ward.

There were 29 deaths out of 566 in-patients, which gives a death-rate of 5·7 per cent. of the cases treated.

Of the 29 deaths, 11, or 38 per cent., died within 72 hours of admission.

The net cost (medical attendance alone excepted) per caput was 57·2 cents per diem, which is lower than last year.

The total expenditure was $4,238·89, against $3,828·58 for the previous year; and the revenue $897·29, against $817·40.

F.—Lunatic Asylum.

The Medical Superintendent, Dr. Earle, submits an exceedingly interesting report, and one that is well worthy of careful perusal.

The re-erection of the old almshouse buildings has been completed, and very extensive repairs to the other buildings on the male side carried out.

I much regret to say that there is yet a considerable amount of rebuilding to be done; this cannot be avoided, as the buildings are old, and some of them have been pronounced as unsafe by the Colonial civil engineer.

The steady increase in our numbers taxes the accommodation of the asylum to its utmost limits.

The following statement will show the value of the work done at this institution by the attendants and inmates:—

Farm produce	$7,706·74
Bakery, labour value	853·20
Parching rooms	189·48
Laundry	3,250·00
Tailors' shop	224·08
Sewing room	411·13
Shoemakers' shop	132·75
Printers' shop	87·50
Other tradesmen	9,085·00
Total	$18,969·88

The net cost (medical attendance alone excepted) per caput per diem was 17·4 cents, which is higher than last year.

The total expenditure was $51,012·99, against $47,115·36 for the previous year; and the revenue $1,737·02, against $2,561.85.

G.—Leper Asylum.

The buildings are in very fair order; the grounds are well kept, and the inmates always appear cheerful at my inspections.

The medical superintendent has at times to complain of their unruly behaviour.

There were 22 cases of absconding during the year. It will be noticed that all of these are males. The female asylum is completely surrounded with a high galvanised fence. Unfortunately, the male asylum cannot, on account of its position with regard to the Mahaica Creek, be thoroughly enclosed unless at a very large expense.

There were 82 new cases admitted during the year, of which 50 per cent. were East Indians.

The net cost (medical attendance excepted) was 14·1 cents per diem, which is the same as last year.

The total expenditure was $22,030·14, against $21,754·21 last year; and the revenue $27·00, against $22 00 for last year.

III.—District Dispensaries.

These dispensaries are situated as follows:—

Upper Berbice River.—The dispenser in charge is provided with a corial for the purpose of travelling up and down the upper reaches of the river, his residence being at Ida Sabina.

Upper Demerara River.—The dispenser resides at Akyma. He is provided with a corial, and visits when required.

Moruca District.—The dispenser resides at the Mission at Santa Rosa, and is under the direction of the priest in charge.

Potaro.—The dispensary is about eleven miles from the Potaro Landing. The dispenser resides on the premises, and the dispensary is provided with beds for the reception of urgent cases. This building was erected solely on account of the labourers engaged on the Gold Placers in that locality. I regret to say that the large majority of these people do not recognise their obligations as to paying the nominal sum charged for treatment and maintenance.

Pomeroon River.—The dispenser resides at the mission at Cabacaburi, and is provided with a small boat and a boy to assist him, for the purpose of visiting the different grants and homesteads on both banks of the river at stated periods. He is under the direct supervision of Mr. Humphreys, the magistrate of the district; and owing to their combined efforts I am very pleased to record that there has been a marked diminution in the number of cases of yaws. The dispenser is a most painstaking, hardworking officer, and performs his duties in an exemplary manner.

The following table shows the expenditure in connection with the different dispensaries and the amounts collected from those who are able to pay a small fee according to tariff:—

Dispensary	No. of Paying Patients	No. of Police Patients	No. of Poor Persons Treated	Total	Expenditure	Revenue
Potaro	562	36	87	685	$1,045·88	$217·41
Upper Demerara River	457	18	290	765	345·99	106·13
Upper Berbice River	325	—	517	842	359·76	45·63
Pomeroon	293	49	1,688	2,030	583·46	72·96
Total	1,637	103	2,582	4,322	$2,335 09	$442·13

IV.—Prison Hospitals.

At the periodical inspections these have been found to be clean and tidy, and the sanitary condition satisfactory. The reports of the medical officers in charge are published with the annual report of the inspector of prisons.

The following table shows the number of prisoners admitted and the number of deaths in these hospitals during the year:—

	Admitted to Hospital			Died in Hospital		
	Males	Females	Total	Males	Females	Total
(1) His Majesty's Penal Settlement	332	..	332	16	..	16
(2) Georgetown ..	234	24	258	2	..	2
(3) New Amsterdam	38	3	41	..	..	..
(4) Suddie	58	1	59	..	..	..
Total	662	28	690	18	..	18

V.—Onderneeming Reformatory for Boys.

The hospital attached to this institution is in a satisfactory condition, and is always clean and well kept. The report of the medical officer is published with the annual report of the superintendent. The inmates appear to enjoy fair health. The boys suffer chiefly from malarial fever. There was one death during the year.

VI.—Orphan Asylum.

The children appear to enjoy good health. The sanitary arrangements are satisfactory. The medical inspector has the medical charge of the inmates. There were four deaths during the year.

VII.—Almshouse.

The infirmary wards attached to this institution are under the medical charge of Dr. Matthey, who in addition acts as medical attendant to the outdoor poor, surgeon to the police, and health officer for the port. The cases treated are mostly chronic diseases; as this institution, in addition to being an almshouse for the poor and aged, is a home for those suffering from chronic and incurable complaints; as many of these cases from the public hospitals which are not likely to benefit by further treatment, and are unable to support themselves, and for whom there is room, are sent there; this is unavoidable, as it is essential that the beds at different hospitals should be occupied by those who are likely to benefit by hospital treatment.

VIII.—Immigration.

The report and statistical returns of the medical inspectors of estates hospitals are published with the annual report of the immigration agent general.

The are at present fifty estates hospitals, having accommodation for 3,031 patients.

During the year 90,932 in-patients and 24,503 out-patients were treated.

There were 1,483 deaths, which is equivalent to a death-rate of 16·3 for every thousand cases treated.

These figures show the enormous amount of work done by the medical officers and the amount of medical relief afforded by the planters, as it must be remembered that the whole cost, with the exception of the salaries of the medical officers, is paid by them.

It is my pleasant duty to report that the estates' authorities continue to carry our the requisitions of the medical officers and medical inspector in a most willing manner, and in no instance have they resorted to Section 88 of the Immigration Ordinance No. 18 of 1891, which gives them the right to appeal to the surgeon-general; this is most gratifying, and shows their desire to do everything in their power for the welfare of the immigrants under their charge.

I am also very pleased to record that, with only one or two exceptions, all of the estates' hospitals have, by my special request, been provided with good but inexpensive microscopes, which are of the greatest assistance to the medical officers in diagnosing diseases.

Water Storage on the Sugar Estates.

This continues the same as has existed for years, *i.e.*, the water is stored in open trenches. A water supply in this colony is not satisfactory unless provision is made either for collecting and storing rain-water in tanks or vats, or the bringing of water from uncontaminated sources by means of pipes, and storing it in tanks or vats, care being taken to see that the receptacles for its storage are so situated as to make fouling impossible. The system adopted on Plantation Blairmont, by which the rain-water collected from the roof of the factory buildings is stored in a large concrete tank is, in my opinion, the best. I can quite realise that the expense of such a scheme is a serious obstacle; but this could be spread over a series of years by erecting concrete tanks capable of holding say, 50,000 gallons every year or every second year. The advantages to be gained by having pure drinking water are enormous, and would repay the estates. If cholera were to become epidemic in this colony, the want of a water supply, as indicated above, would be very acutely felt.

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EXTRACT FROM A LETTER WRITTEN TO AN OFFICER ON FIRST APPOINTMENT AS AN ASSISTANT RESIDENT BY A FORMER RESIDENT IN NORTHERN NIGERIA.

Tropical Outfit.

I shall be very pleased indeed if I can be of any use to you over outfit for Northern Nigeria, but do not suppose I can give you any more advice than Way and Co., who are well up in the needs of the country.

Men always take too much kit with them the first tour, and old stagers take very little, not because they buy there, but because everything is so rough that one can do with little; still, I am of opinion that kit amply repays one for the trouble in taking it out, especially if one has the luck to drop in for a pressure of work.

You can generally get the usual tinned stores at the Niger Company's Stores in the principal places (at about 20 per cent. on home prices). But you should certainly take out with you a box of provisions for the trip up river from Burutu to Lokoja. This takes seven days, but you should have enough food for fourteen to allow for waiting at Burutu, and for breakdowns.

You can get kettles and things there sometimes, but do not rely on getting any kit there.

You can get a list of kit recommended by the Colonial Office with their compulsory list, and I do not think you could do better than let Way and Co. buy for you what you decide to take, as they have outfitted most of the men who have gone there for the last two years.

I enclose a list of things I took myself, which, while perhaps you will think it too long, may give you an idea of what to take.

I enclose a copy of the contents of ration boxes Way and Co. supply, with a few notes in case you make them up yourself.

Also a note of stores I think I should take if I were going out again myself.

Also some notes on foodstuffs, and some on messing.

All baggage should be in 60lb. lots, as there is nothing but head carriage off the river. You can leave heavy things or cases of stores, &c., with the storekeeper at Lokoja.

The Colonial Office told me to take about £25 in gold, and this is sound so long as too much of it does not go in cards and things on the voyage out. You can generally draw some pay on arrival, and there is a very nice and useful allowance of 5s. a day coming in monthly.

Besides this, if your duties necessitate a horse, you get 2s. 6d. a day for that.

My advice generally to anyone going out to Northern Nigeria would be "go slow," and that would apply to everything.

Notes on Kit.

Pants, Singlets, Socks.—Thin wollen, two thick for voyage home; the uplands are very cold.

Collars and Cuffs for voyage, soft shirts worn there, boiled ones not recommended.

Pyjamas.—Twice as many as you use at home.

Cholera Belts.—Everyone pleases himself in these.

Mosquito Net.—Oblong top, not bell shape.

Mirror.—One 6in. by 9in. is a comfort.

Ground Sheet.—Take the thickest and biggest obtainable.

Blankets.—At least six, it is very cold on the uplands, cheap as possible, not white.

Rug.—Cheerful for quarters.

Mackintosh.—As strong as possible, when it rain you know it.

Rubber Boots to knee.

Sweater.—Take two at least.

Water Bottle.

Helmet.—There is a very good regulation pattern, you may take two, khaki and white.

Cap for night wear, never go out for a minute without helmet in daytime.

Belt.

White Canvas Boots can be bought at many places (Smith and Son, Derby Road, Nottingham) for 5s., quite good enough, take four pairs.

Strong Boots.

Spare Laces.

Dubbing, but you can get shea butter there.

Puttee Leggings.

Blanco costs 2d. a cake here, 6d. there.

Puttees.

Dark Goggles if sun troubles you.

Army Revolver.—0·450, with some dum-dums.

Saddle.—Any old one.

Lee-Metford Sporting Rifle, 0·303.

Basket with enamel ware, knives, &c., and all cooking utensils for two persons. Take as good a one as you care to.

Mincing Machine.—Small one, meat is so tough.

Hausa Grammar.

Trousers.—Nothing so cheap and lasting as khaki.

Dress Clothes.—If you like, the regulation dress is either that or the white Eton jacket, which is better.

Holland Jackets for office work.

Uniform.—There is a compulsory list which you can get from the Colonial Office.

Tools.—Serviceable ones.

Stencil.—With your name in one-inch letters, cheap and useful.

Tinder-box, Matches, Straps, Eel-line, Thread, Needles, and 1,001 things every man choses for himself.

Sheath Knife.—Small, but strong.

Lantern.—Small talc-sided folding, cost about 5s.

Lamp.—Lord's lamp, for kerosene is popular.

Old Clothes.—Especially old flannels and sporting things are immensely appreciated by the boys there.

Shirts.—Soft white canvas shirts, same as used here for tennis, are the regulation there, take four. Strong flannel ones are also a blessing all over the earth.

Medicines.—Please yourself, the necessary things are aperients and quinine, whichever form suits you best of each.

Compactum Bedstead, Camp Folding-table and Chair, Cheap Deck-chair, Canvas Bath.—On no account fail to take these.

Washstand or basin, but you can get an enamel basin at Burutu, which will do well enough.

Life Insurance.—I found the Royal Exchange the best office.

Notes on Stores that are Useful.

Suggestion for Four Cases. — Biscuits all useful, especially "Cabin Bread," which does in place of bread, the ordinary ship's biscuits, 30lb.; flour, 24lb.; vegetables, as cheap as can be got, 18lb.; coffee, 6lb.; tea, 6lb.; cocoa, Vi-cocoa is slightly stimulating, and, therefore, very useful when run down, 6lb.; rice, 6lb.; ground rice, 3lb.; macaroni, 3lb.; sago, 6lb.; tapioca, 6lb.; candles, 6lb.; crystallised sugar, hard, 6lb. Meat: Irish stew, stewed rabbit, rations, 18lb. Grease, lard or dripping, whichever is cheapest, there is no fat in the land, 24lb.; marmalade and jam, good for aperient, 24lb.; milk, Ideal or Viking brands, *not* sweetened, 24lb.; soap, 6lb.

All packed in as small tins as possible, for Tropics.

Notes on Foodstuffs to be Obtained there.

Chickens, the staple food, cost from 6d. to 1s., small, tasteless; guinea-fowl, ducks, and turkeys, get these when possible, better than chickens, a little dearer; meat, dear, tough, no fat in it; bananas, excellent cooked or raw, cheap; paw-paw, when ripe an excellent fruit, when unripe a good vegetable; fruits and vegetables, several kinds, make your boy look out for them in the markets; onions, the staple vegetable, the salvation of the country; fish, this is plentiful in the river, make your boy go early to market or arrange with fishermen for it, some taste muddy, some are boney, but some are first-class; eggs, plentiful; milk, can be obtained where there are the cow-Fulani—on the highlands; yam, ubiquitous vegetable, woolly, indigestible; sweet potato, more digestible than yam. Water: be very careful about this, drink distilled water and none other if near condenser; if not, boil and filter every drop; native-made foods, avoid all these, because they are nearly always made with bad water.

Notes on Messing, &c.

Coast Boys are expensive, do not know Hausa, are not popular with the other native servants.

God-palaver Boys.—Mission boys are not, as a rule, satisfactory, they too often despise their master, they seem to have lost much of the usual respect for the white men, either too much hypocrite or too simple to be much use (but see below).

Balarla.—Keep one, not for use, it is a pity to hurt your boys, but because the sight of it is wholesome to them.

Crockery.—Have this returned to the basket as soon as possible after every meal, keep the basket in your own room, under your eye, open so that you can see at a glance that all the things are there.

Table.—Let this be as simple as possible and as regular.

Stores.—These should be reserved as much as possible for emergency, eke out the foodstuffs obtainable with them.

Luxuries.—Everything is so undeveloped that these soon become more trouble than they are worth.

Boys.—The Chief of Police at Lokoja keeps a register of boys; if you have not got one before arrival there, go and see him at once; look out for a boy at Burutu, men often bring a boy down to that place with them when they go on leave; if you have not got one there, make great effort to get one at Onitsha; the Asaba boys are good ones, if you have time go and see whether the Roman Catholic Fathers at Onitsha can recommend one; their boys are not open to the objection to which other God-palaver boys are.

Extract from a Letter from an Officer in Northern Bomu.

I found such great help from the information which you (Way & Co). had gathered in your office, that you might care to have the result of my experience as regards kit. If length of time in trekking and canoeing, and variety of methods of transports (canoe, steamer, human carriers, oxen, donkeys, and camels) go for anything, I may claim to be an expert. I have also talked over kit and supplies with ever so many men, both my old stagers and "new chums" (of each of those classes a man has been my companion on the way up). To take your list of supplies *seriatim*:—

Compactum Bed, Willesden's Outfit, Linen. — Of course, all sound. The Government are issuing complete sets of tables, chairs, and washstands, but an extra set of one's own is most handy; the only points are that in the X-bath and washstand the ring fastenings *always* tear through, it would be much better to *stitch* the cloth loops on.

Brown Blankets.—Excellent.

Large Jaeger Sheets.—Too much praise cannot be given them; they are invaluable, especially up here, where we go to about 40° sometimes at night.

Travelling Bath, Ground Sheet, Kit Bag, Hammock Chair.—Quite good.

Lord's Lamp.—Excellent in its way, but should be backed up by a similarly made and fitted (*i.e.*, oil holder and tin) lamp half the size; the big one burnt too much oil, and is too big and liable to breakage for rough trekking—oil up here is some three months distant, and is a consideration. It would be sound if men brought out strong drums of kerosene oil; the ordinary thin tin ones supplied by the Niger Company do not stand trekking; *e.g.*, out of six tins we brought up, there is, I think, only *one* unpunctured one.

Berkefeld Pump Filter.—Excellent, of course; take also six extra cylinders. I strongly advise *also* a syphon filter, *i.e.*, a candle with long rubber tube (many spare tubes required), but the pump filter does its work quickly, of course; the other is slower.

Water Bottle.—The best one would be one which, when fitted, would weigh about 50lb., with a lockable tap, felt covered; often on the trek water-places are far distant one from the other.

Uniform Cases.—Your small ones are invaluable; just the right size and *weight*, and very strong.

Goggles.—Required.

Medicine Chest.—Large one, as fitted *by you* (not my assortment).

Saddle.—I find mine excellent.

Guns.—Good.

Cartridges.—Always saleable, if not required—very scarce here.

Sponges.—Three or four.

Jaeger Goods.—These, for comfort and warmth combined with coolness, if I may express it, are *excellent*.

Canteen Basket.—This is one point on which I am

absolutely certain of my ground. The Bucket canteen baskets are absolutely a mistake; this is not the opinion of myself only, but of everyone. What is required is a large, square, strong basket, with divisions and lock, into which the things (whether made of china, aluminium, or enamelled material) fit easily. The round canteen basket is worse than a Chinese puzzle, and no boy ever packs it until he has lost half the things; in the meantime the "overflows" are carried round in a box. I believe there are two men in the Protectorate who have succeeded in repacking a canteen basket, but I am not likely ever to qualify in this line. Also bring a couple of dozen large and small aluminium tumblers.

Norris' Boots.—Excellent.

Hicks' Goods.—Quite satisfactory. The *detachable* collar game, though, is a mistake; let all shirts have their collars. I reckon, even allowing for the washing here, that two dozen 2s. 6d. shirts will last a year. The bush shirts are really good, and men will find them quite sound.

Camera.—Yes, bring one. I bitterly regret not having done so. From all accounts, the "British Ensign" does not give satisfactory results in this light.

Provisions.—For men situated in outlying districts, one cannot bring out too much of the standard things—sugar, jam, and that kind of thing. One can always get meat and chickens there. It is impossible, however, to give any tips unless one knows where one is going: this much, though, one can always dispose of spare stores.

THE LIVERPOOL SCHOOL OF TROPICAL MEDICINE.

Death of Dr. Dutton.

It is with the deepest regret that we announce the sudden death of Dr. Dutton, Walter Myers Fellow, at Konongo, in the Congo, on February 27th, while actively engaged in the investigation of trypanosomiasis and tick fever. In 1903 Dr. Dutton, accompanied by Dr. Todd, proceeded to the Congo to investigate trypanosomiasis and other tropical diseases; towards the end of 1904 they had reached Stanley Falls and independently they were able to demonstrate the cause of tick fever in man, a discovery made a few weeks previously by Ross and Milne in the Uganda Protectorate.

Further, they were able to prove the transference of the disease from man to monkeys by means of a particular species of tick. During these investigations both observers contracted the disease. The last letter received from them was dated Konongo, February 9th, when they both appeared in excellent spirits and were on the return journey.

In the death of Dr. Dutton the Tropical School and the University has suffered the loss of its most brilliant graduate. Although only twenty-nine years old, he has already won a recognised position throughout the scientific world, and as recently as last October Professor Koch, in an address before the anniversary meeting of the Berlin Medical Society, exhorts all nations to lend assistance to the work of combating trypanosomiasis in man so successfully conducted by the expeditions under Bruce, Dutton and others. Educated at the King's School, Chester, he proceeded to the University of Liverpool, where he rapidly made his way, and in 1897 he was appointed to the George Holt Fellowship in Pathology, which gave him the opportunity for research. This fellowship, the first of its kind which was established in the University, has proved of the greatest service in encouraging research. Lieut. Christophers, I.M.S., now Director of the King Institute of Hygiene, Madras, held it in 1896; Dr. Annett, the present Lecturer in Comparative Pathology in the University and Superintendent of the Farm Station of the Liverpool Institute of Comparative Pathology, held it in 1895; and Dr. E. E. Glynn, the present Lecturer in Clinical Pathology, held it in 1899. Dr. Dutton entered the Royal Infirmary, where he acted as house surgeon to Professor Rushton Parker and house physician to Dr. Caton.

In 1901 he was elected to the Walter Myers Fellowship in the Tropical School. His first expedition to West Africa took place in 1900, when with Dr. Annett he visited Nigeria. Two reports were issued as the result of this expedition, one dealing with anti-malaria sanitation and the other consisting of one of the most complete monographs upon filariasis hitherto published. In 1901 he proceeded alone to the Gambia and drew up a most comprehensive and useful anti-malarial report which has proved of the greatest service to that Colony. It was during this expedition that he identified in the blood of a patient of Dr. Forde, the Medical Officer of Bathurst, a trypanosome, belonging to a group of animal parasites which had hitherto been only found in animals. He accurately described and named it. Subsequently he found the same organism in numerous other cases in the Gambia and elsewhere. It can hardly be doubted that this brilliant discovery of the first trypanosome in man by Dr. Dutton was an important factor in leading to the discovery of the cause of sleeping sickness, which was subsequently shown by other observers to be due to the same parasite. In addition to his discovery of *Trypanosoma gambiense*, he also described several other trypanosomes new to science.

In 1902 he proceeded with Dr. Todd to the Senegambia and drew up a report on sanitation, which was presented to the French Government, and further papers on trypanosomiasis were published. The present expedition to the Congo was sent out in 1903. Dr. Dutton was accompanied by Dr. Todd and Dr. Christy, the latter returning to England in June, 1904. It was evident by the letter which they sent to the Committee of the School that they had made many exceedingly valuable observations whilst tracing sleeping sickness along the river-banks and in their investigations upon the nature of tick fever and filariasis. It will be seen from this short account that, although only twenty-nine, Dr. Dutton has accomplished a vast amount and has advanced in a most striking manner our knowledge of medicine. Medical science has lost

one of its most promising and distinguished men. The city of Liverpool will mourn the loss of its most gifted student, and his colleagues in the University and the Royal Infirmary have lost one who, combined with a great intellect a charming personality which made him beloved by all.

Correspondence.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—In your issue of the 15th instant, just received, I observe that mention is made of an outbreak of beri-beri at Tura, in the Garo Hills, Assam, by Dr. Crozier. In giving a description of eighteen cases, we are told that "some appeared scarcely typical forms of the complaint, the majority afforded examples of signs and symptoms indistinguishable from beri-beri. The outbreak was first noticed in May, 1904."

As to the cases reported by Dr. Crozier, of the American Mission at Tura, I would desire to disagree with the last sentence about the cases being "first noticed in May, 1904." I was Civil Surgeon of the Garo Hills in 1897, and I have had the students of the mission under my medical care, and had three cases of a similar character as Dr. Crozier's, though not quite typical; a description of them is to be found in the pages of the *Indian Medical Gazette*, vol. xxxii., under the title "So-called Kala-azar of Assam." I enclose a reprint of the article for favour of perusal and early return, and would draw attention to pp. 10-12 for publication.

Yours truly,
G. H. FINK, Major I.M.S., M.R.C.S., L.S.A.

Reprinted from the *Indian Medical Gazette*, vol. xxxii. (Nos. 6, 7, and 8, June, July, and August, 1897).

THE SO-CALLED KALA-AZAR OF ASSAM.

By Surgeon-Major G. H. FINK, I.M.S.
Civil Surgeon Garo Hills District.

In page 7, para. 1. of his pamphlet, Giles says:—

"Now this epidemic affection of the nervous system presents not the least similarity with anything met with in Assam." Moreover, he asks us to compare these accounts (Wernick's and Pekelharing's) with Dr. Kynsey's pamphlet, p. 5, para. 26. "In the one disease," he says, "the prominent character is paresis, anæmia is an after and unessential complication; in the other, the leading symptom is anæmia, and no true paralysis ever occurs."

Although my experience of Assam is too brief to enable me to speak with the same authority on the subject as Giles, yet, during my short sojourn of about six months in the Garo Hills, the disease kala-azar has absorbed a great deal of my thought and attention, and I have met with these cases among Garo native Christians, which do not seem to bear out Giles's statement with regard to paresis. The three cases were in young Garos of 18, 19, and 20 years of age respectively. The medical history of all these cases, which I have carefully ascertained, was an attack of fever which preceded loss of sensation, which began in the toes, and spread gradually up the limbs. The most pronounced of these three cases (Makhal) is a thin, dark-skinned, spare lad, 5 ft. 4 in. in height, of fairly healthy appearance, clean looking and intelligent.

From his family history, it appears that his father died of kala-azar; his mother and a brother are living and healthy. His present illness began two years ago with fever; he says he had kala-azar, and that he also passed a number of small worms.

His present state shows him to be apparently healthy, except that he has slight hypertrophy of the spleen; his appetite is poor, but he is not anæmic, and he has partial loss of sensation as far as the knee-joints, particularly over the region of the peronei muscles; his gait is peculiar, not that of locomotor-ataxy which is so very characteristic, but his legs are somewhat wide apart in walking, inclined to be knock-kneed at the same time, whilst he drags his feet along, has great pains in the soles, and a tingling sensation as far as the ankles. Cramps are occasionally felt in the legs. His eyesight is good, urine normal, knee-jerk exaggerated. The other two cases (Modhan and Jangran Garoxians) also give a history of fever, preceding the partial loss of sensation, which at present only extends as far as the toes. Both appear to be healthy and in good condition, and say they never had kala-azar nor worms. Their spleens are slightly enlarged: but there is nothing peculiar in their gait.

Makhal, moreover, states that three years ago several cases similar in character to his occurred in the Baptist Mission compound, and there were enlarged spleens accompanying them.

The above cases certainly point to disturbance of the nervous system subsequent to attacks of fever, and not attended by anæmia.

I have seen several so-called cases of kala-azar in the Garo Hills, and the above three cases have no resemblance whatever to that disease, but certainly resemble cases of malarial fever and cachexia which I have witnessed in India, Burma, the Punjab, South Afghanistan and Beluchistan, and most nearly allied to the worst forms of malarial cachexia.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—In your Journal dated December 15th, 1904, Dr. Duprey of St. Lucia suggests that the marking of the tongue so often seen in ankylostomiasis is due to chewing Phan. Phan, I suppose, is similar to, if not identical with, Betel.

I have now a Chinaman under my care who is a native of China, has been in this country for four years, has never chewed Betel, but whose tongue had the marking spoken of. Examination of the stools showed the ova of ankylostomum. It is not argued, I believe, that the markings occur in every case of ankylostomiasis, but whenever I find the markings I look for the ova, and, so far, have never failed to find them.

It seems to me that the Chinaman I have mentioned proves that the markings are not due to the chewing of Phan or Betel.

Yours faithfully,
J. TERTIUS CLARKE.
March 28th, 1905. *District-Surgeon, Tehah, Assam, Lower Perah.*

Reviews.

VERB. SAP. On Going to West Africa, to Northern or Southern Nigeria, and to the Coasts. By Alan Field, F.R.G.S. Messrs. John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, London W. Illustrated. Pp. 166. Price 2s. 6d. 1905.

This book, Vol. I. of the "Verb. Sap." series, augurs well for the success of the attempt to supply information to intending travellers and emigrants to tropical colonies. Mr. Field, in his preface, states that "no literary merits are claimed for "Verb. Sap.," but the book is written in the spirit and style of a true and practical teacher, and no one who reads it can fail to remember the facts the author wishes to impress. Although practical details are the very keynote of the author's endeavour, the book is written in so attractive a style that even the general reader, who never contemplates visiting West Africa, will find it most fascinating. Those about to take up residence in the parts of West Africa "Verb. Sap." deals with will find the book not only indispensable to help them at the outset of their career, but if they are wise they will make the book their daily companion, referring to its pages when difficulties arise, be they of the nature of travel or household worries, diseases and how to prevent them, or in the recognition of the flora or fauna of their environment. No one is forgotten; the soldier, the merchant, the naturalist, the missionary, the nurse, the sportsman and the amateur gardener will each and all find what they want to guide them, from the making of household drinks to the shooting of big game. In addition to the contributions by Mr. Field, there are excellent chapters by Sir Harry Johnson "on Sport, Shot and Saddle"; on "The Languages of West Africa," by L. H. Nott; and "Notes on Mapping," by E. Reeves; "Postal," by a Postmaster-General; "Military," by Captain W. Wright, V.C.; Life Insurance, Trade Notes, &c. An excellent map and a full index complete a book which it is hoped will be made a compulsory part of the equipment by Government, mercantile or missionary authorities of every one of their nominees proceeding to West Africa.

Notes and News.

THE SUNFLOWER VICE. — Marcoa in *Archives Generales de Medicines* draws attention to the habit prevalent amongst the Russian peasantry of eating sunflower seeds. The seeds are bitten and the husks ejected with the saliva which has been found impregnated with bacilli of deleterious characters.

Large quantities of sunflower seeds have been sent to the Russian soldiers in Manchuria. Marcoa considers that the ensalivated husks tend to spread disease amongst the troops.

LEPROSY IN NEW YORK.—Dr. C. F. Roberts reports that there is no truth in the statement that there are 200 lepers walking about in New York city. Three cases of the disease only are known and they are isolated in Blackwell's Islands. Dr. Roberts has never seen a case of leprosy contracted in the United States.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Arch. für Schiffs-und Trop.-Hyg.," March, 1905.

De l'Œdème dans les Maladies tropicales (Œdema in Tropical Diseases). By Dr. R. Wurtz, Paris.

Dr. Wurtz specially states that his present remarks on intertropical œdemata apply only to those due to the dropsical infiltration of the subcutaneous connective tissue.

In many acute tropical diseases œdema is seen to be connected with varied and for the greater part ill-defined and still unknown causes. It is a symptom possessing a considerable semeiological value, although this does not apply equally to all cases. It is difficult to classify the œdemata of tropical diseases according to their pathogenesis, this latter being still full of obscurity. The order which we are about to follow will be determined by the importance of the *rôle* which this symptom plays in the different diseases in which it is observed.

In addition to the ordinary, and one might almost say common-place diseases which cause œdema in temperate climates, such as diseases of the heart, blood-vessels, kidneys, and nervous system, in hot countries there must be added other causes which produce œdema; there are the œdemata due to infectious diseases peculiar to intertropical regions, whether of microbic or of parasitic origin.

The diseases connected with œdema to be met with in hot countries may be classified as follows:—

(1) Those in which œdema constitutes a special symptom, such as the wet form of beri-beri, epidemic dropsy, and that curious affection known as calabar swellings.

(2) In other diseases œdema is seen as an epiphenomenon and as an accessory symptom; such as the œdemata of malaria, filariasis, verruga, and other microbic and parasitic infections.

Beri-beri.—Œdema, in the dropsical form of beri-beri, is the chief symptom. It generally begins in the feet and legs, over the ankles, and on the front of the tibiæ, or on the dorsum of the foot at the level of the metatarso-phalangeal articulations. The pretibial and perimalleolar œdemata are among the forms most frequently met with. It may remain limited to these regions, or on the other hand it may extend to the knees, thighs, scrotum and trunk, and the sternal region. The sacral region is often invaded. Œdema must always be sought for in this situation when absent from the other parts of the body. It is also

found in the lumbar regions and along the whole of the vertebral column. It is most often symmetrical, but may only be present on one side of the body, or in one limb, or in both unequally. It sometimes alternates, occupying one hand and the opposite foot. When œdema is general, the patient appears as if suffering from ordinary anasarca. In certain cases the invasion is very rapid, anasarca being established in forty-eight hours.

The œdema may sometimes be restricted to certain regions, such as the neck, the face, the thorax, &c.

In the limbs the œdema is most marked on their anterior aspect. It may stop laterally and not be found posteriorly, contrary to what is observed in the cardio-renal œdemata which are more prominent in the dependent parts. The predominance of œdema over the sacrum is therefore not due to the action of gravitation.

In the face the swelling is sometimes enormous, the eyelids being so greatly tumefied that the patient cannot keep his eyes open, but is obliged to separate the lids with his fingers.

The intensity and the consistence of the œdema are variable.

The progress of beri-beric dropsy presents this peculiarity, inasmuch as having appeared suddenly and extended rapidly, it also recedes equally quickly; but if it appeared gradually, it slowly disappears. Its mobility is one of its most remarkable characteristics. It sometimes happens that the patient on awaking finds that he has become dropsical during the night; and in hospitals the physician may sometimes observe that between two consecutive daily visits the body of a certain patient distended with anasarca has regained its normal shape and volume.

The œdema is sometimes accompanied by effusions into the serous cavities (ascites, hydrothorax, and hydropericardium), and by infiltration of the submucous cellular tissue (œdema of the glottis has sometimes required tracheotomy).

The nature of the beri-beric œdema is probably of nervous origin. It is a trophic disturbance as are also the cyanosis, the thickening of the skin more or less marked over the œdematous parts, the hyperhydrosis, and the different exanthemata which are observed in certain epidemics.

The cardiac origin of the œdema, which one might think of when recalling the frequency of heart troubles in beri-beri, does not tally with the localised character, the mobility, and the peculiar behaviour of the œdema in this affection.

Epidemic Dropsy.—In this disease the œdema is general; anasarca rapidly sets in, and may be preceded by prodromata (fever, diarrhœa, vomiting, &c.).

The œdema does not always commence in the feet and legs, but may begin with the hand and forearm.

When it begins with the feet it sometimes does not extend beyond the knees; but it may progressively invade the thighs, trunk, and the whole body generally. In certain cases it is most persistent even during convalescence, and may even reappear when the patient is about to be discharged from hospital.

Calabar Swellings.—English physicians have designated by this name certain localised œdemata which appear intermittently and without prodromata in certain regions of Africa, in the basin of the Congo, in the course of the Upper Congo, and especially at Brazzaville and at Lobreville.

This œdema is preceded by a deep-seated painful sensation at the spot where the swelling is about to appear. The region is tense, tumefied, and tender. The pain and swelling last for a various length of time and then disappear. These œdemata may spread to the hand and also to the limbs, the knees, and as high as the ears. They come and go, and reappear after a longer or shorter interval, either at the same spot or in some other part of the body. They may impair movements by the stiffness which they cause as well as by the actual pain.

The examination of the blood of persons attacked by these œdemata has as yet not revealed the presence of any parasite.

They are found in the geographical sphere of *Filaria loa*. Dr. Wurtz once had the opportunity of observing these painful and ambulatory swellings in a lady suffering from *Filaria loa*; the swellings were situated preferably on the wrists, the hands, or one of the fingers. The extraction of the parasite did not cause them to disappear; but as the œdema had sometimes occurred in the neighbourhood of both knees, it is possible that more than one parasite was present in the patient's connective tissue.

According to Manson these swellings are due to the irritation of the connective tissue caused by the parasite laying her eggs.

Œdemata appearing as an Epiphenomenon in Tropical Diseases.

Malarial cachexia is accompanied by a soft, depressible, and pale œdema; the swellings are generally multiple, and at first limited to the dependent parts, although they may afterwards become extended, and by their puffiness mask the emaciation of the cachectic patient. The skin may show tortuous veins or purpuric spots.

In malarial anæmia œdema is often to be met with over the malleoli, and in the severer forms it may be more extensive. Its onset is insidious and rapid, but it disappears equally quickly under the influence of quinine.

Hæmoglobinuric Bilious Fever.—The renal lesions which so frequently complicate this affection determine the œdemata and anasarca peculiar to nephritic cases.

Verruga.—In acute verruga one often sees œdema commencing over the malleoli, and thence extending to the legs, but it rarely becomes general. Odriozola considers that the œdema is due to the great anæmia which is one of the first symptoms of the acute form of verruga, not Carrion's disease.

Filariasis. — The lymphatic thrombosis is accompanied with œdema in adenolymphocele. Above the obliterated lymphatic trunk, generally on a level with the swollen glands, there is a soft and indolent tumefaction, without heat, and giving the finger the sensation of touching an indiarubber ball.

In *trypanosoma fevers* one of the characteristic symptoms is the periocular œdema of the eyelids, which is especially marked when the patient wakes up in the morning.

In *dengue* œdema of the hands and feet has been noted as a complication.

In *pellagra* the patches of vaso-motor paralysis are often accompanied by œdema.

In *chronic dysentery* patients in the last stage of cachexia may have œdema.

Lastly, œdema may be present in cases of nephritis which result as complications in pestilent diseases, such as *cholera, typhus exanthematicus*, and *relapsing fever*. J. E. N.

"Arch. für Schiffs-und Trop.-Hyg.," December, 1904.

Yellow Fever Mission, Brazil. By Drs. Otto and Neumann.

Twenty-four cases were seen, but only three before the fourth day. In the absence of bacteriological examination early albuminuria is the only basis of differential diagnosis; the characteristic odour of the patient, and tenderness over the bladder are aids.

Dr. Oswald Cruz has two thousand men under him at Rio de Janeiro engaged in destroying and preventing the breeding of mosquitoes.

The young Stegomyia, which bite during the day, are rarely infected; adults only bite at night.

When cases of yellow fever occur on board ship where Stegomyia exist, there is a risk of an outbreak of yellow fever for thirteen or fourteen days. T. P. P.

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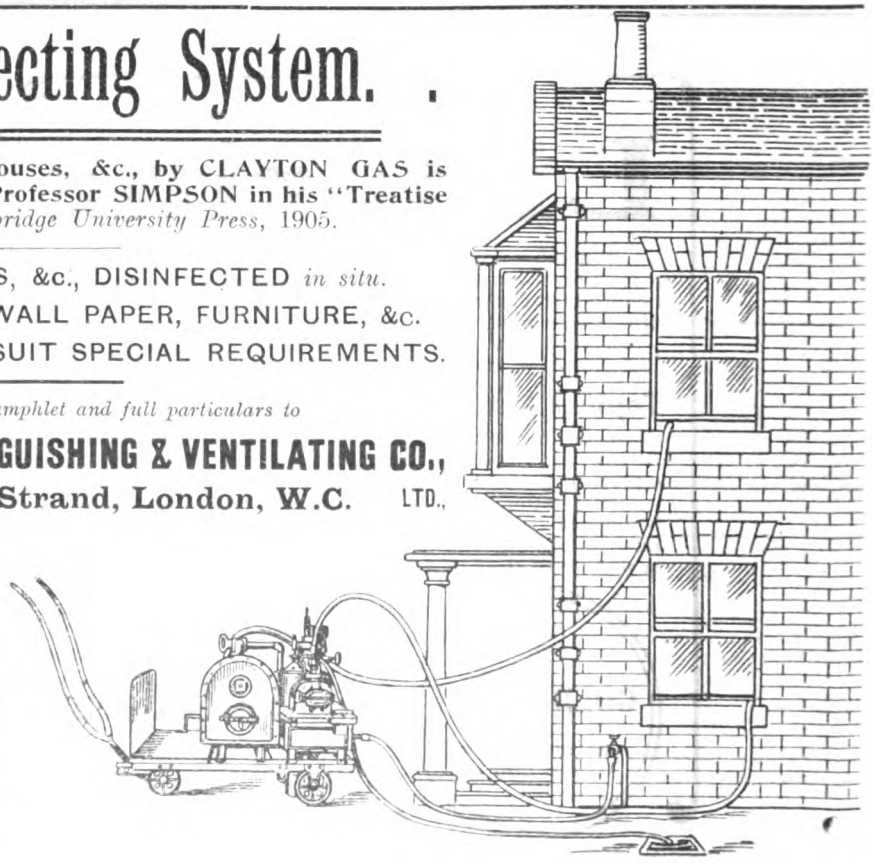
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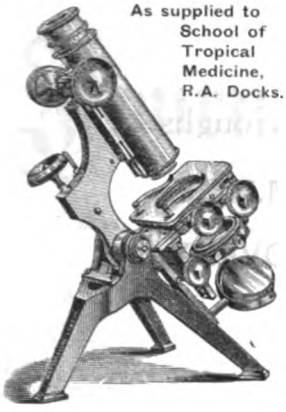
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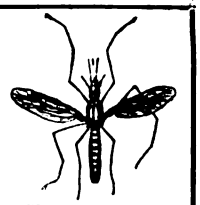

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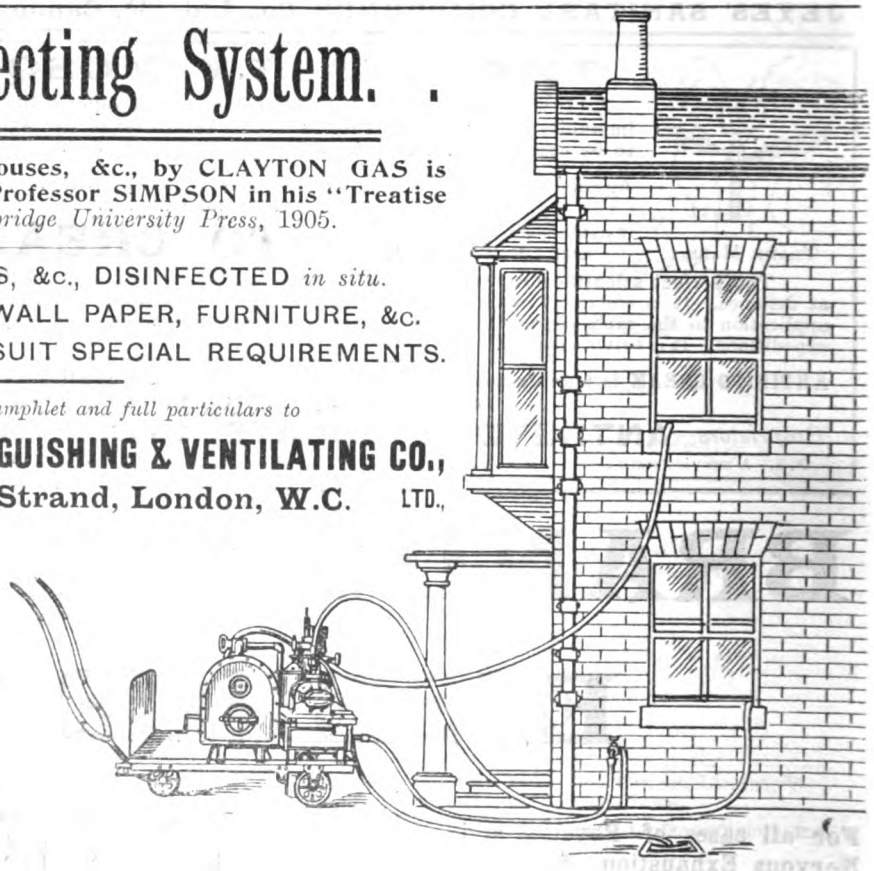
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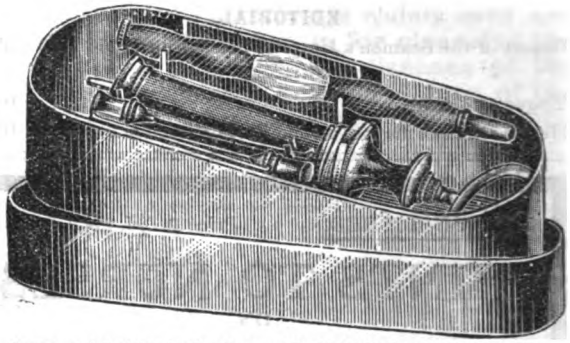
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Original Communications.

AN ENQUIRY INTO THE ETIOLOGY AND PATHOLOGY OF BERI-BERI.

By Hamilton Wright, M.D.(McGill).

Director of the Department for Medical Research, Federated Malay States.

Abstract No. I.

(From Vol. ii., No. 1, "Studies from Institute for Medical Research, Federated Malay States." Printed by authority of the Resident-General, F.M.S. Singapore: Kelly and Walsh, May, 1902.)

Probably there is no disease whose etiology is so much a matter of speculation as that of beri-beri. Certainly there is no disease whose literature when read leaves one in so great a state of mental confusion. Nitrogen starvation, pernicious anæmia, infected fish and raw fish diet; arsenical, carbon dioxide and miasmatic intoxication; bacterial and plasmodic infection, are amongst the many direct causes put forward to account for it. They are largely speculative or founded on superficial or one-sided observations. No one of them is generally accepted. Many of them may and ought to be excluded as chief pathogenic factors. There is no better field than the Malay Peninsula in which to investigate this disease. In it are gathered together members of nearly all Oriental peoples affected by the disorder.

When it is seen that one (the Chinese) alone of these several peoples furnishes the great majority of cases of beri-beri, while ranking only second in numbers, it is but natural to feel that by a simple process of comparison and exclusion the causative factor of beri-beri may be readily determined.

Geography of British Malaya.

The Malay Peninsula juts down from the south-eastern corner of Asia. That part of it which properly concerns us extends from about 6° 8′ to 1° 12′ north latitude. It thus lies wholly within the Tropic of Cancer.

The total area of this part of the Peninsula is about 34,259 square miles. Included in this area are the protected Malay States, composing a federation known as the Federated Malay States, representing the greater part of the square mileage (23,959 square miles) of the British portion of the Peninsula.

But there is, in addition, the colony of the Straits Settlements composed of Singapore island and city, Malacca, Penang, Province Wellesley and the Dindings, containing about 1,300 square miles; and Johore, containing about 9,000 square miles.

Geology and Mineralogy of the Peninsula.

The facts that most of those who suffer from beri-beri are tin miners, that disturbance of virgin soil is claimed by some to be potent in producing beri-beri, and that the question of arsenical poisoning has now been thrust into the discussion of the etiology of the disease, would seem to point to geological formations as having to do with beri-beri prevalence. Closer observation, however, annuls this conclusion; and arsenic, so frequently found in conjunction with tin and lead, and at one time supposed to play a part in beri-beri, has no etiological significance.

Meteorology and Climatology.

The direction of the monsoons appears to be a determining factor in outbreaks of beri-beri. In the Kwala Lumpor Gaol and other public institutions where the incipient signs of the disease may be at once observed, leads me to state that only a small percentage of cases contract the disease during the south-west monsoon. The returns of beri-beri during the latter are composed of cases of beri-beric residual paralysis which remain over from the previous monsoon and are readmitted, or of cases that have contracted the disease during the latter part of the north-east monsoon.

Classification of Beri-beri.

The older authorities classified beri-beri as (*a*) wet and dry, or (*b*) acute pernicious, hydro-atrophic, atrophic, rudimentary.

Neither of these classifications appears to be proper in view of the underlying pathological lesion in the central and peripheral nervous system and alimentary tract.

I propose to classify beri-beri as follows:—

Acute pernicious beri-beri, which is always fatal.

Acute beri-beri, which runs a course of from three to six weeks, leaving the patient paralysed.

Beri-beric residual paralysis, which persists after the specific virus has ceased to act.

Incubation Period of Beri-beri.

The incubation period of beri-beri is between ten and fifteen days, although extreme paralysis and the other fuller effects of the virus may not manifest themselves till some days after the first demonstrable symptom of nerve lesion.

Racial Characteristics and Incidence of Beri-beri.

Europeans.

Beri-beri is almost unknown amongst Europeans, no matter what their social status; one or two authenticated cases only have occurred in the Malay Peninsula during the last ten years.

Eurasians.

In his dietetic habit the Eurasian is Malay, Chinese, or Indian, in inverse ratio to the purity of his European blood. Beri-beri prevailed to the extent of only 0·005 per mille. amongst Eurasians, compared with 118·236 in Chinese.

Malays.

Careful enquiries have failed to elicit, except rarely, the history or any evidence of the presence of beri-beri amongst Malays living in their natural environment. The swollen feet (*kaki bengkak*) noticed amongst the Malay population is an œdema due to simple anæmia following malaria, for in none of these cases were the cardinal nervous symptoms of beri-beri found. It would appear that the Malays, who live largely upon rice, vegetables, curried fish and fowl, and occasionally mutton, as a body escape beri-

beri, because of the absence of some dietetic factor that obtains with the susceptible Chinese; for in the Kwala Lumpor Gaol it was found that in their own chosen diet cooked by one of themselves the Malays developed beri-beri in a larger proportional percentage than either the Chinese or Tamils.

The Tamils.

Beri-beri is really uncommon amongst the Tamil community whilst they live under their usual condition of life, but when placed in an infected area such as the Kwala Lumpor Gaol the Tamils suffer proportionately to the Chinese or other inmates. Still more remarkable is it that beri-beri occurs in epidemic form amongst Tamils in India, but in British Malaya they enjoy a marked freedom from the disease when compared with the Chinese. The rice eaten by the Tamil is almost invariably prepared *a la* Bengal in Penang.

The Chinese.

Out of a total population of 1,250,844 in the portion of the Malay Peninsula under discussion, 581,672 are Chinese. (This estimate was made in 1902.)

The dietetic habit of the Chinese coolie is generous up to his means; compared to the lowest class of labourers in Europe they are well fed. The rice is either from Siam or Rangoon; with his rice the coolie takes vegetables grown in the Chinese way, and top-dressed chiefly with human excrement; salt fish, preserved locally; fresh fish on rare occasions; pork is largely eaten, and on his frequent fête-days, dried fowl. The Chinese coolie rarely, if ever, eats curry or other highly seasoned foods. He is a total abstainer as regards alcohol, but he is as a rule an opium-smoker. It is not the opium-smoker, however, who contracts beri-beri as a rule. The Chinese are the greatest sufferers from beri-beri, amounting to no less than 213·862 per mille. of the Colonial and Federal population. The Straits-born Chinese who represent the higher class of the Chinese communities are an exception. They are not wholly exempt, but there is some factor in their usual social and other habits that renders them more immune than other classes.

The great majority of the Chinese who contract beri-beri are the Sinkhehs or contract immigrants. If sent to the old mining grounds where beri-beri is present the disease may be contracted by the newcomer almost at once; if to a new mining ground where beri-beri is severe and widespread the newcomer contracts the disease in from a week to several months, depending on the prevalent monsoon.

Amongst the Orientals assembled in the Malay Peninsula the Chinese, not the tin miners only, but the Chinese generally, almost exclusively contract beri-beri. In the Kwala Lumpor Gaol all classes of the Chinese, the contract labourers, the older immigrants, and the Straits-born Chinese, amongst whom the disease is almost unknown outside the Gaol, developed beri-beri in almost equal proportions. This cannot be accounted for by a faulty diet or any other hypothesis than association in a building infected by some specific organism.

Incidence of Beri-beri in regard to Sex.

Male Europeans and Eurasians very rarely contract beri-beri; females never. Amongst the Malay community beri-beri is no respecter of sex. Chinese females are subject to the disease, but in the Malay Peninsula it is only the better class Chinese who bring their wives. On the whole we may conclude that females of the different races are susceptible to beri-beri to the degree to which they live under the conditions that induce it in males. It is not improbable that, given females in the tin mines or institutions where beri-beri is endemic, they would contract the disease equally with the males.

Incidence of Beri-beri in regard to Age.

Infants and adolescents are rarely attacked by beri-beri; but in the Malay Peninsula children make up a relatively small number of the total population, the majority of which consists of unmarried Chinese and Tamils. Amongst Malays—the natives to the country—the number of children under ten years of age attacked by beri-beri count for nothing in this particular question. Of 1,200 cases of beri-beri personally observed it would appear that the second and third decades are those of greatest susceptibility.

Incidence of Beri-beri in regard to Locality and Altitude.

Locality.

There is scarcely a tin mine in the length and breadth of the country that has not at some time been scourged with acute pernicious beri-beri; there are a few where the disease is now seldom seen; there is not one where the disease is never seen. In recently opened mines such as Bentong and Sungei Lembing the disease is widespread, severe, and largely fatal. In the older mines, where a large majority of the coolies have had acute beri-beri, from which they have apparently wholly recovered or have had more or less severe beri-beri residual paralysis for years, the disease would appear to be rarer.

The kind of mining, whether surface working or in deep excavations, has no relation to the number of cases of beri-beri. Workers in tunnels with sunken shafts are not prone to beri-beri.

Beri-beri is proportionately as severe amongst workers in gold mines as in those who work in tin mines.

In institutions, of which the Kwala Lumpor Gaol stands as an example, the disease when once established seems to defy all efforts to eradicate it.

On the sugar and other estates, although beri-beri is not endemic, short, sharp epidemic outbreaks of the disease occur amongst the Chinese.

Altitude.

Beri-beri in the Malay Peninsula is apparently a disease of the lowlands. The majority of people seldom live at altitudes much over 1,000 feet; but at the Sempan tin mine, where work is carried on by Chinese and Malays at altitudes ranging from 700 or 800 to 4,200 feet, no freshly developed cases of beri-beri ever occurred.

In fishing villages along the coasts beri-beri is

unknown; it would seem, therefore, that the process of curing fish is not capable of infecting with the specific organism of the disease. It is noticeable that the further the Malay population is removed from centres of civilisation the less beri-beri is seen in it.

Discussion of the Foregoing in their Relation to Beri-beri.

(*a*) Can it be positively shown that any of the above outlined local conditions are factors in the production of beri-beri? Geographically the Peninsula is in the beri-beri belt, and so far as beri-beri of Asia and Australasia is concerned it is centrally situated. It is also on the great highway of disease, and since the great influx of Chinese and Tamils began it has proved to be a more or less fine soil for the seeds of plague and dysentery, as well as beri-beri.

(*b*) That there is any geological condition that governs the beri-beri rate does not seem likely. The Peninsula is outside the volcanic belt, and is not troubled by seismic disturbance. So that it is beyond the action of Fierbig's theory that the operation of an assumed gas forming specific organism is closely related to the curve of activity of seismic and volcanic disturbance.

(*c*) It cannot either be believed that the geological formation favours the residence of a specific organism which operates effectively when the earth is disturbed; for beri-beri has not been and is not at present a disease of the agricultural classes either Malay or Chinese. No mineral poison can be regarded for a moment as the cause of beri-beri. This applies with force to arsenic. Looked at from any point there are compelling facts against a view that the cause of beri-beri is influenced by any geological factor.

(*d*) When meteorological conditions are examined it has to be granted at once that they and the specific factor of beri-beri are in some manner related.

(*e*) Temperature alone does not appear to operate, for here it is fairly uniform. There is, however, much ground for believing that the north-east rather than the south-west monsoon contains some element which favours the operation of the specific cause of beri-beri. The rainfall is greater and the general humidity higher during the former than the latter. It is probable that these favour the effective action of the beri-beri virus as they appear to do in Japan and the islands of Australasia.

(*f*) Altitude appears to have a definite bearing on the causation of the disease. Beri-beri is not seen in high altitudes here; only in the low, moist valleys. The disease, too, appears to be a place disease. Into institutions and kongsies which never receive the action of direct sunlight the disease is introduced and there it holds more or less complete sway for years, in spite of all efforts to eradicate it. The reason of this is to be found in the action of a specific organism that operates on persons in close association, as will appear later. That the disease is sharply circumscribed to shaded, damp foci, is, I think, due to the fact that the organism is of low vitality and quickly destroyed by the action of direct sunlight.

(*g*) It will be recognised by the casual observer that in the differences in the dietetic and other habits of the various races here, there is a vast opportunity for speculation as to the cause of beri-beri, and as to why one race (the Chinese) should be so prone to the disease, while other Oriental races (Malays, Tamils and other Indians) largely escape it.

(*h*) For instance, one has only to assume that the direct cause of beri-beri is due to a specific organism which gains entrance to the body through the skin, and that oiling the latter effectually excludes it. On this assumption it could be argued that the vast majority of the Tamils of British Malaya escape beri-beri because of their habitual oil-bath, and that the Chinese suffer severely because they do not take an oil-bath. Such an assumption is trivial in view of the fact that Tamils and Telegus have suffered from severe epidemics of beri-beri in their native habitat where the habit it is assumed protects them here must be more strictly in vogue. In the Madras Presidency there is to-day a focus of endemic beri-beri.

(*i*) Further, one might assume that beri-beri is due to a specific organism that developes on growing rice, and that Tamils who escape the disease do so because by their method of preparing their rice the organism is destroyed, and that Chinese, on the other hand, contract the disease because they eat rice not so prepared. Dr. L. Braddon, the State Surgeon of Negri Sembilan, is a strong advocate of this theory, and he brings forward many locally observed facts to support his view. But they are entirely thrown out by a wider experience of beri-beri. For instance, in Rangoon the Tamils, Telegus and Chinese eat the same rice as eaten by Chinese here, yet the Tamils and Telegues furnish 90 per cent. of the cases of beri-beri, while the Chinese altogether escape.

(*j*) If it is at once recognised that all these races are susceptible to beri-beri, and have at one time or another had it either epidemically or endemically in their natural habitat, no theory will for a moment be based on differences in racial habits, but a special cause will be sought, which may and does often act generally on a whole community, irrespective of sex, race, age, occupation, dietetic and other habits.

(*k*) It seemed to me that if one were given a focus in which beri-beri had been long epidemic or endemic, where regulations in the matter of sleep, work, diet and personal hygiene could be uniformly applied to a mixed party of Malays, Chinese, Tamils and other Orientals, it might readily be determined what etiological theory of beri-beri best fitted the facts. With the above conditions guaranteed, it seemed to me possible that many of the theories put forward to account for beri-beri could be excluded, and the question at least is narrowed to a working hypothesis that would be generally accepted.

Various Theories of the Causation of Beri-beri.

The theories most often advanced are as follows:—

(1) Gelpke's theory that beri-beri is due to dried fish infected by a trichina.

(2) Miura's theory that it is due to the ingestion of certain kinds of raw fish, principally the Scombridæ.

(3) Grimm's theory that it is due to the ingestion of infected fish.

(4) Takaki's and others' theory that it is due to a

pathogenic diet in which the proportion of nitrogen to carbon is too small.

(5) Ross's theory that it is due to arsenical poisoning.

(6) The theory that it is due to the ingestion of mouldy rice.

(7) Braddon's theory that it is due to the ingestion of a specific organism which developes on growing rice.

(8) Manson's theory that it is due to a place germ (earth, floor or house) which distils a toxin, volatile or otherwise, that, being inhaled or ingested, produces the disease.

(2) Glögner's theory that it is due to a hæmic plasmodium.

(10) My own conclusion that it is due to a specific organism that remains dormant in certain localities, but having gained entrance to the body by the mouth it multiplies locally (in the stomach or duodenum chiefly), gives rise to a local lesion and produces a toxin that, gaining the general circulation, acts on the peripheral terminations of both afferent and efferent ordinary and vital neurones to cause a bilateral symmetrical atrophy, and that finally the organism escapes in the fæces, to again lie dormant in places.

Discussion of the Various Theories.

Theories Nos. 1, 2 and 3 are absolutely eliminated, because during the eight months from May 3rd, 1901, to January 1st, 1902, not an ounce of fish of any description entered into the diet of the 49 prisoners who up to that time contracted beri-beri. Twelve of the 49 were incarcerated during June, July and August, *i.e.*, after the diet was instituted, and contracted beri-beri in September, October, November and December, *i.e.*, between four and five months after incarceration. With the short incubation period of beri-beri there can be no question of the 49 having contracted the disease from their diet before admission to the gaol.

Theory No. 4 is as effectively eliminated, for the diet contained a proportion of 1 N. to 12 C.; the physiological requirement being 1 N. to 15 C. The prisoners had the benefit of this highly nitrogenised diet for eight months, during the first four of which but few cases of beri-beri occurred, but during the latter four of which many cases occurred. If the extra nitrogen in the diet could have prevented the disease it should have done so most surely after the prisoners had had the benefit of it for four months. That there was little beri-beri during the four months following the institution of the high grade diet means nothing; for it has long been noted in the Kwala Lumpor Gaol that comparatively few cases occur from May to September. The onset of beri-beri during and after September and its subsidence in February and March after the high grade diet was abolished (January 1st, 1902) is conclusive evidence that it is wholly independent of the proportion of N. and C.

Theory No. 5 is eliminated, because arsenic in any shape or form did not occur in the gaol either before or during the eleven months' observation. There was no disturbance of soil, no tinned fruits, meats or vegetables used, and no sugar that might have been contaminated with arsenic. It would be absurd to suppose that all of the 90 cases that originated had arsenic in their systems when incarcerated, the effects of which were exhibited in from ten days to eighteen months after. It should be remembered in this connection that not a member of Party No. 3 contracted beri-beri, although it was exposed to extramural influences as well as to intramural conditions similar to Parties Nos. 1, 2 and 4, except in the matter of sleeping.

Theory No. 6, that beri-beri is due to mouldy rice, is wholly discountenanced by the fact that the prison rice was free of mould, and that all latent mould spores or mould toxins were destroyed by the process of steaming to which the rice was subjected (para. 286).

Theory No. 7 is wholly discredited for similar reasons. He will be a bold and badly informed theoriser who contends that the Siam or Rangoon rice of the Gaol held an active specific organism or toxin after being steamed for two hours under two atmospheres of pressure. Braddon's theory is founded on an assumption pure and simple (para. 225), supported by one-sided evidence which falls to the ground in the face of the single incontrovertible fact that 90 cases of beri-beri occurred when the Siam rice used was sterile.

Theory No. 8, that there is a specific germ, appears from my observations here to be true. But there is no evidence to support that part of this theory which assumes the distillation of a volatile poison and its inhalation or ingestion. The entire escape of Party No. 3, let alone Party No. 4, would be most unlikely in the presence of a volatile poison that caused some 90 original cases in one part of the Gaol compound and over 100 cases of paralytic relapse in another part.

Theory No. 9 has no foundation in fact. A thorough blood examination of beri-berics in all stages of the disease has not disclosed a plasmodium that could be associated with the disease as either its direct or indirect causative factor. Where plasmodia have been found they have belonged to one of the well-known malarial types.

Theory No. 10 is the only one that fits all the facts of the case. It holds good for the beri-beri of institutions and other communities. Unfortunately the specific organism has to be assumed. But granting its existence, the early symptoms of acute pernicious and acute beri-beri and the *post-mortem* appearances of the pylorus and duodenum in the former (*see* Obs. 3) declare conclusively that it enters the body *viâ* the mouth, multiplies locally in the stomach and duodenum, and produces a toxin that is absorbed into the systemic circulation to act bilaterally and symmetrically as a poison on the peripheral terminations of the afferent and efferent ordinary and vital neurones.

The elimination of theories from 1 to 10 is completed by the results obtained in observations on monkeys incarcerated in the infected Gaol.

(To be continued.)

Dr. A. Yale Massey, formerly of Benguella, West Africa, has been appointed Medical Officer to the Tanganyika Concessions, Central Africa.

NOTE UPON A CASE OF HÆMATURIA.

By Arthur F. Cole,
C.M.S. Hospital Ningpo, China.

A woman, age 40 to 45, was admitted on February 27th, 1905, to the C.M.S. Hospital, Ningpo.

On examination she was found to be suffering from general œdema of slight degree, ascites, liver enlarged downwards 4 inches below costal margin in nipple line, spleen about 2 inches below ribs, considerable anæmia and slight icterus; her cardiac sounds and measurements suggested hypertrophy of left ventricle; no murmurs present. The urine was evidently blood-tinged, but the woman said she had never noticed anything peculiar herself; she gave three years as the history of her illness' commencement. She was very breathless, owing to an attack of subacute bronchitis, in addition to her other embarrassments.

Catheter Specimen of Urine.—Sp. gr. 1020, reaction acid, presence of red blood corpuscles, vast quantities of leucocytes and numbers of granular renal casts, and in addition certain circular parasites, which may have been associated as a causative agent with the cystitis and nephritis.

Fæces were examined and were not found to contain anything to note in the direction of ova.

Whilst examining urine with 1/6″ objective I was astonished to see a circular body suddenly split up, and extrude a circular embryo. The urine was not centrifugalised.

Description of Capsule.—Apparently smaller than the embryo which I had seen emerge with a bound from it, and which lay touching it. Diameter 33 μ, roughly circular if split portions were placed in opposition; it seemed to be covered with minute prickles, but otherwise transparent, the split extended to about two-thirds of diameter of capsule.

Description of Embryo.—Diameter 45 μ, perfectly circular, measurement taken ten minutes after extrusion. Divided into clear outer zone surrounding inner darker area evidently embryonic, somewhat ovoid in form; the width of this zone varied from 10 μ to 6 μ in this first observed specimen. The differentiation of the inner dark portion is evident, and it seems to consist of an elongated central body with numerous globular protuberances with the appearance of columnar epithelium. Thus the *central* portion would measure about 35 μ × 40 μ.

Every embryo seen was absolutely circular and nothing in the way of terminal spines or oval bodies seen. Measurements of those found on three successive occasions in catheter drawn urine were as follows: 45, 42, 50, 42, 40, 35, 35, 50, &c.

The average was about 43 μ circular. Seeing the interest taken in her excreta, patient became fearful of her safety and decamped after thirteen days in hospital.

"New York Medical Journal," March 4, 1905.

Adenoids amongst Negroes.

Scheppegrell in an editorial draws attention to the fact that in the United States of America adenoids are met with amongst negroes, though proportionately less frequently than in white people. In the negro of the purer African type the total number of cases of adenoids met with amount to about 6½ per cent. of the whole.

Business Notices.

1.—The address of the Journal of Tropical Medicine is Messrs. Bale, Sons & Danielsson, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All **literary communications** should be addressed **to the Editors.**

3.—All **business communications** and **payments,** either for subscriptions or advertisements, should be sent **to the Publishers** of the Journal of Tropical Medicine. Cheques to be crossed The Union Bank of London, Ltd.

4.—The Subscription, which is **Eighteen Shillings** per annum, may commence at any time, and is payable in advance.

5.—Change of address should be promptly notified.

6.—Non-receipt of copies of the Journal should be notified to the Publishers.

7.—The Journal will be issued on the first and fifteenth day of every month.

Reprints.

Contributors of Original Articles will be supplied free with six copies of the Journal if a request accompany the MS. If reprints are required they will be supplied by the publishers, if the order is given with remittance when sending the MS. The price will be as below:—

50	Copies of four pages,		5/-;
100	,,	,,	6/0;
200	,,	,,	7/6;
50	Copies beyond four up to eight pages,		8/6;
100	,,	,,	11/0;
200	,,	,,	14/6.

One page of the Journal equals 3 pp. of the reprint.

If a printed cover is desired the extra cost will be for 50 Copies, 5/6; 100 Copies, 6/6; 200 Copies, 7/6.

THE

Journal of Tropical Medicine

June 1, 1905.

REPORT OF THE SEAMEN'S HOSPITAL SOCIETY FOR 1905.

The authorities of the Seamen's Hospital Society of London have so identified themselves with the teaching and furtherance of tropical medicine that the annual report of the work done at their hospitals and dispensaries is of interest to all residents in the Tropics. No society, public institution, or hospital board in the kingdom appeals more directly to our sympathy, for to the sailor is extended a regard and romantic interest such as no other class of the community commands. The old wooden walls have given place to boats of steel, the flowing sail has been supplanted by machinery and its attended inconvenience of furnace and smoke, but the sailor himself remains to us, somewhat more conventional and unromantic, perhaps, than in olden days, yet by his occupation does he commend himself to our regard in health and our sympathy in sick-

ness. It was as long ago as 1817 that a fund was collected in London to found a hospital for seamen, and in 1821 a permanent floating hospital was established in the Thames at Greenwich. At first the *Grampus*, a 50-gun ship, was utilised for hospital purposes, but increased accommodation had to be found, and the *Dreadnought*, a 104-gun ship, was substituted in 1830. After twenty-seven years' service the *Dreadnought* was replaced by the *Caledonia*, but as the institution had become known as the Dreadnought Hospital the Society thought it wise that the new ship should be re-baptised, and the name "Dreadnought" was continued to its successor the *Caledonia*. Ships, however, were never intended for permanent hospitals, and the Society did wisely when, laying aside sentiment, they resolved to build a permanent hospital on shore. In 1870 the Infirmary of the Greenwich Hospital was handed over to the Seamen's Hospital Society on a ninety-nine years' lease, and the good work, begun in 1817, is being continued and expanded. The largest hospital of the Society at Greenwich contains 225 beds, and to this day it is known from old time associations as the "Dreadnought" Hospital. At the Victoria and Albert Docks, on the north side of the Thames, is the Branch Hospital of the Society with fifty beds, and to this Hospital is attached the London School of Tropical Medicine. Besides the Hospitals there are two Dispensaries for Seamen, one at the East and West India Docks, and the other at Gravesend. At these several institutions sailors of every race, colour and creed are received, nor are they discharged, as in other hospitals, until not only the malady is relieved, but until health and strength are completely restored. The cosmopolitan character of the Society and the universality of its usefulness have been acknowledged by every civilised country and by almost all the monarchs and governments of Christendom. It seems well-nigh impossible to believe in this maritime nation that the following statement should be permitted to be possible: "£21,000 at least will be needed to carry on the work of providing for the 25,000 sick and injured sailors and others who, it is estimated, will apply for relief during 1905, and of this sum not more than £5,000 can be looked upon as assured income. The Committee, therefore, invite contributions towards the £16,000 required. They desire to point out how comparatively few bequests are made to the Dreadnought."

In the interests of the sailors of all nations, we hope this appeal will be quickly and amply responded to, and that a Society which deserves so well of the country will not be allowed to fail in its usefulness for the paltry sum of a few thousands of pounds.

PLAGUE AT LEITH.

An outbreak of plague at Leith, occurred between May 5th and 10th, when four persons, the father, the mother, and two of their children, aged 6 and 3, were found to be infected. The symptoms were in the first instance attributed to enteric fever, then to typhus, and it was not until a bubo developed and a bacteriological investigation was held that the true nature of the illness was ascertained. The father, a labourer on a train line, was the first to be seized. The mother, a worker in a rag store, showed symptoms of illness, and she is alleged to have stated that she saw two dead rats in the premises in which she worked. The rags are reported to have been "clean," and no rats have been found infected with plague in the premises in which she worked, nor anywhere else in Leith. There is no clue to the source of infection, although it is considered that the arrival of ships from Eastern ports and from Hamburg may have had to do with the outbreak. The order of admission into hospital was first the father, May 5th; the child of 3, May 8th; the mother and child of 6, on May 10th.

Unusual precautionary measures were adopted. Contacts were isolated, rats searched for and examined, the clothing and tenement disinfected, and the outbreak notified to foreign governments.

HEALTH OFFICER'S REPORT ON THE PORT OF LONDON.

Dr. Herbert Williams, Medical Officer of Health for the Port of London, in his report for 1904, states that in the ships arriving at Gravesend:—

(1) Cholera. No cases met with.

(2) Yellow fever. No cases.

(3) Plague. One case in a vessel from a port on the River Plate. The man recovered after two injections of Haffkine's anti-plague serum.

TUBERCULOSIS IN MEN AND CATTLE.

THE vexed question of the relation between tuberculosis in man and in animals remains still unsolved. Koch, as is well known, is of opinion that tuberculosis in man is essentially different from that in cattle, whilst Behring maintains that both forms of tuberculosis are identical, and that the poison is introduced into the body by milk, and gains access to the system by way of the intestines. Kitasato supports Koch's contention, and advances in favour of his belief the following statements :—

(1) Tuberculosis in man has existed for centuries in Japan, whereas the disease in cattle was unknown in Japan until about thirty years ago, when foreign cattle were imported and introduced the disease.

(2) Inoculation of animals with human tuberculosis has always proved negative.

(3) Milk is seldom consumed in Japan ; so that Behring's contention that milk is the chief cause of tubercular infection is an erroneous conclusion.

In China tuberculosis is widespread amongst human beings, but the number of cattle in China are few comparatively, and milk is shunned as an article of diet for both infants and adults.

Kitasato's first argument that tuberculosis amongst cattle was unknown in Japan until about thirty years ago, when foreign cattle were imported, will hardly be an accurate scientific test, as previous to thirty years ago no one in Japan was in a position to test the truth of the statement, and it was only about thirty years ago that attention to this subject was first directed in Europe.

UNIVERSITY OF LONDON.

WE publish the following notice by request :—

Dr. George Oliver will lecture in the Physiological Laboratory, University of London, South Kensington, S.W., on Monday, June 5th, at 5 p.m., on "Hæmomanometry in Man."

Admission to the lecture is free. Students of any school of the University and medical men will be admitted on presentation of their cards.

COLONIAL CIVIL SERVICE.

MR. EDWARD A. SAVAGE has been selected for the office of Collector of Customs, Shipping Master, and Inspector of Invoices of Jamaica in place of Mr. A. W. Hitchins, who has retired from the Service owing to ill-health. Mr Savage entered the Customs Department of Jamaica in 1873, and six years later became a First-class Clerk. He was subsequently made a Second-class Collector of Taxes for the Parish of St. Mary, a position he now relinquishes in favour of Mr. J. L. Lord, who is a First-class Assistant Collector stationed at Linstead.

Mr. F. A. D. Eves, Second-class Assistant Collector of Revenue, Jamaica, succeeds Mr. J. L. Lord as First-class Assistant Collector at Linstead.

Dr. Luigi Camilleri, Magistrate of Judicial Police for the Island Gozo, has been transferred to Malta in a similar capacity in place of Dr. P. F. Azzopardi, who will retire from the Service on April 1st. Dr. A. Mercieca succeeds Dr. Camilleri in Gozo.

Dr. P. Cremona, Senior Magistrate of Gozo, is also to retire on April 1st. Dr. G. B. Mifsud will be transferred from Malta to Gozo as his successor.

Mr. H. G. Hume Henderson has been made Acting Inspector-General of Police in the East Africa Protectorate in place of Captain J. C. H. McCaskill, who has arrived in England on leave.

Mr. Duncan S. Robertson has been appointed Harbour Master for the Port of Monckton, New Brunswick.

Mr. Ernest P. S. Roupell, who has been acting as a Second-class Clerk in the Colonial Office, Downing Street, for the past two years, is to succeed as Assistant Secretary to the Government of Malta Mr. F. C. Fuller, who proceeds to the Gold Coast as Chief Commissioner of Ashanti. Mr. Roupell was for several years connected with the West African Service, and held the offices of Consular Agent of the Oil Rivers Protectorate, Commissioner of the Brass River Division of Southern Nigeria, and Assistant Commissioner of the Anglo-German Boundary Commission. He took part in the Benin River Expedition of 1894 and the Ashanti Expedition of 1900-1901, for which he received the Distinguished Service Order.

Mr. A. R. Slater is acting as Second Assistant Colonial Secretary of Ceylon until his departure from the Colony on leave.

Mr. C. E. Herbert, who has represented the Northern Territory of South Australia in the House of Assembly for some time past, succeeds Mr. C. J. Dashwood as Government Resident and Judge of the Northern Territory.

The office of Registrar-General of Ceylon has been raised from the Second to the First-class Division of the Civil Service of that Colony, and the staff is to be augmented.

In consequence of recent changes in the Police Department of Ceylon, it is stated that Major R. E. Firminger is to retire on pension from the position of Superintendent of the Colombo Convict Establishment, and that Major de Winton, the present Inspector-General of Police and Prisons, will take over the combined offices of Inspector-General of Prisons and Superintendent of the Convict Establishment.

Mr. S. J. Waddell has been appointed Deputy-Collector of Inland Revenue at Truro, Nova Scotia.

Mr. F. Bartlett, District Judge, Negombo, Ceylon, has been made Assistant at Nuwara Eliya to the Government Agent of the Central Province.

Mr. W. T. Hargreaves, Resident Magistrate, Elliotdale, Cape Colony, has been transferred to the district of Lebodi, in place of the late Mr. J. C. Garner, and Mr. W. B. Gordon, who has been on temporary pension, re-enters the Service as Resident Magistrate of Elliotdale.

Mr. Herbert F. Blaine, Attorney-General of the Orange River Colony, is acting as Attorney-General

of the Transvaal during the absence on leave of Sir Richard Solomon.

Mr. W. Cousins has been appointed a Police Magistrate in and for the Province of Manitoba, Canada.

Mr. R. S. Duff Tytler, Superintendent of Immigration, Ceylon, has retired from the Service.

Mr. W. F. Wright, Collector of Customs, Mossel Bay, Cape Colony, is to succeed Mr. W. C. Noble as Chairman of the Harbour Board at that port.

Dr. H. A. L. Noble, Medical Officer of the Uganda Protectorate, has arrived in England on leave of absence.

Mr. F. Robert is acting as a District and Stipendiary Magistrate of Mauritius during the absence on leave of Mr. H. Avice, and has been assigned the District of Black River and Plaines Wilhems, in addition to the Magistracy for the Lesser Dependencies.

Dr. G. P. Campbell is to succeed Dr. J. P. Berrie as District Medical Officer for St. David's District of St. Thomas, Jamaica.

Correspondence.

Croton and Castor Oil Seeds.

Sir,—As there seems to be a little confusion as to the points of diagnosis between the croton seeds and castor oil seeds and their respective composition, I feel it is just as well to know something about them before making any mistakes in their respective characters and action, and I therefore beg their early publication in your columns.

Croton Tiglium, known also as

(*a*) Jamálgota... ... ... Hindi and Gujerati.
(*b*) Jaypal ... ... Bengalee.
(*c*) Nervalam ... ... Tamil.
(*d*) Naypalum... ... ... Telegu.
(*e*) Cudelavancu and Neervaula ... ... Malayalum.

Both the seeds and oil expressed are highly poisonous. Inhaling the dust even from these seeds will produce pain and collapse, but no purging—this is possible when traders send large quantities of this seed in bags, or a mixture of castor oil seed with croton seeds.

Severe symptoms might attend cases of inhalation of the dust, or partaking of the husk or chaff of the seed in certain cases of idiosyncrasy. In these cases it is no crucial test to merely examine the seed and diagnose the castor oil from croton oil seeds (*Croton Tiglium*).

The seeds of the following resemble croton oil seeds in appearance and property, namely:—

(*a*) *Baliospermum montanum*, which are often sold by traders as Jamálgota and accepted by druggists.

(*b*) *Croton oblongifolium*, known also as

Baragach ... ... Bengalee.
Ganasm ... ... Gujerati.
Gonsurmy ... ... Goanese.

The crucial test between the oils of the above and castor oil is that the latter is soluble in glacial acetic acid, and in alcohol. It is completely soluble in four volumes of spirits of wine at 15° C. This diagnostic featureis very necessary to apply medico-legally when cases of poisoning occur, and it will generally be found that the castor oil seeds have been mistaken in identity, unless the embryo of the castor is decomposed, and, being mixed in the same way as any of the above-named seeds resembling *Croton Tiglium*, have absorbed the activity of croton oil which is due to crotonoleic acid (which is not the same as crotonic acid) present in the oil, both free and as a glyceride. Croton oil, besides, contains tiglic or tiglinic acid—isomeric, with angelic acid ($C_5 H_8 O_2$). There is also isocrotonic acid present in croton oil, which, shows the same chemical behaviour as crotonic acid. They come under the unsaturated acids ($C_n H_{2n-2} O_2$)

Castor oil seeds resemble croton seeds and another castor oil seed of a reddish colour with brown patches (much used for industrial purposes). Ricinoleic acid is obtained from castor oil—its effect in the oil is purgative, and enhanced by the biliary secretions, and, in certain cases of idiosyncrasy, produces violent inflammation. Other symptoms might occur, but, as a rule, they are due to adulteration of the seed or as above mentioned.

G. H. Fink, Major I.M.S., M.R.C.S., L.S.A.
12, *Fairfax Road, Bedford Park, W.*

Cancer in the Tropics.

Sir,—The subject of cancer and its relative prevalence in temperate and tropical regions respectively is one of very great interest and importance, since it enables those interested in the disease to either uphold their contention as to the various causes at work, and thus focus the germ or parasite or whatever be the *causa vera*, and be guided strictly by statistics of value in all research.

I have been interested in cancer for the last three or four years, and previous to that, in malaria and tropical ulcer and "bursatee" in the horse in India. I enclose a cutting which gives my views on the points I have all along contended, and which were placed before the India Office previous to the publication of my *brochure* on "Cancer and Precancerous Changes, their Origin and Treatment," from which the cutting was taken. The reason for my placing my views before the Secretary of State for India (Lord George Hamilton) before publishing my work was that, as a member of the Indian Medical Service, I might timely awaken interest in the subjects of malaria and cancer from a research point of view. I am glad that I did so, as it has evoked an earnest desire to ascertain its prevalence in India among the various people of its different provinces, and so far fulfilled a good object.

From Fink's "Cancer and Precancerous Changes, their Origin and Treatment." xvii., p. 32.

"*Malaria, Delhi Sore, 'Bursatee,' and Rodent Ulcer or Cancer.*—It is necessary to mention certain points of interest on the subject of malaria and certain ulcers found in man and the horse in India which bear resemblance to rodent cancer.

"Some authorities have lately drawn attention to an antagonism between malaria and cancer, and that they bear an inverse ratio to one another in their prevalence. These points have brought forth a suggestion that persons be inoculated with malaria to protect them from cancer.

"Malaria and cancer might be considered antagonistic to one another; but it is by no means logical or scientific to conclude that the one would protect a person from the other if inoculated. In the matter of their bearing an inverse ratio to one another in their prevalence, the explanation is to be sought for in the peculiar influence of climate in these respective diseases; also the surroundings, habits, and race peculiarities present, which have doubtless a voice in their production respectively.

"The one disease is peculiar to tropical, the other to temperate regions. Disease, like plant and animal life, flourishes in particular regions, either tropical or temperate, where the conditions for the life of the parasitic forms are most favourable and the pabula sufficient and suitable for their life and reproductive changes.

"I have no desire to discourage the suggestion made of inoculating man with malarial fever to protect him from cancer, nor to affirm that this method of treatment is injurious or free from benefit. I merely wish to point out that it is not based on facts and observations from a scientific point of view, but purely empirical and wanting in scientific proof, since there are no data present to base such views upon.

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PUBLISHED UNDER THE AUSPICES OF THE LONDON SCHOOL OF TROPICAL MEDICINE.

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The total spent on vaccination for the year was $35,471.00.

Appendix B. shows the number of vaccinations performed in the different districts in the Colony during the year.

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Colonial Medical Reports—No. 9.—British Guiana (*continued*).

IX.—Quarantine.

The enforcement of quarantine on account of the existence of smallpox in some of the West Indian Colonies and British Guiana has caused considerable inconvenience to the travelling public, and loss to the mercantile community; so much indeed, that on all sides it is admitted that our quarantine laws and regulations require considerable modification to bring them into line with the more enlightened regulations of other countries. His Majesty's Principal Secretary of State for the Colonies, recognising the importance of the subject, summoned a conference consisting of delegates from British Guiana and all the British West Indian Colonies to meet at Barbados on April 21st, 1904. It is to be hoped that the outcome of their labours will be the adoption of a uniform system, and not, as at present, where each place has its own laws and regulations.

Mr. G. H. Richter and myself were nominated as the delegates from British Guiana.

When the year opened the following places, which had been proclaimed by His Excellency the Governor as infected (Section 9 of Ordinance 3 of 1870), were still liable to quarantine restrictions: Barbados, on account of smallpox; Trinidad, on account of smallpox.

The proclamation against Barbados was withdrawn on May 11th, 1903, and that against Trinidad on February 18th last.

Two batches of French refugees, in all ten men, were placed in isolation on arrival in the colony, and all their belongings were carefully disinfected.

No case of yellow fever occurred in this colony.

Fifteen vessels were placed in quarantine at this port during the year under review.

This colony was quarantined on account of the existence of smallpox by Dutch Guiana, Barbados, Trinidad, Grenada, St. Lucia, Windward Islands, and Bermuda.

Trinidad raised quarantine against British Guiana in January last, and early in March Barbados, Grenada, and Dutch Guiana also removed restrictions, St. Vincent doing so towards the end of the same month.

Surinam reimposed quarantine against this colony on the occurrence of two sporadic cases of smallpox on March 24th.

When the year closed (March 31st, 1904) this colony was being quarantined by Dutch Guiana, Barbados, and Bermuda.

X.—Vaccination.

Glycerinated calf lymph is imported for the use of public vaccinators.

There were 108,860 successful vaccinations during the year.

The amount voted for vaccination for the financial year was $6,000.00, but supplementary votes amounting to $41,313.00 were passed by the combined Court.

The total spent on vaccination for the year was $35,471.00.

Appendix B. shows the number of vaccinations performed in the different districts in the Colony during the year.

XI.—Health of the Colony.

A.—Death-rate.

The death-rate of the whole colony was 28·9 per thousand, and the birth rate 29·3 per thousand, the births exceeding the deaths by 14.

The death-rate for the city of Georgetown and its environs, exclusive of the country patients at the public hospital, was 44·1 per thousand.

The high death-rate of Georgetown points to the existence of some special cause or causes why the death-rate of the city should be so much greater than that of the Colony generally.

I attribute the causes to the following:—

(i.) The insanitary condition and excessive overcrowding chiefly amongst the lower and poorer classes; this means deficient ventilation and light, and the unfortunates who have to breathe the vitiated atmosphere contract all sort of diseases.

(ii.) Tuberculosis is accountable for 13·9 per cent. of the total deaths, and as the percentage of deaths from this disease for the whole Colony is only 8 per cent., it proves conclusively that the excess of this disease is largely due to overcrowding.

(iii.) Excessive infantile mortality; 22·8 per cent. of the total mortality was due to children under one year of age, and 29·1 per cent. to children under five years of age.

(iv.) Want of a proper way of disposal of sewage. the city is in parts saturated with sewage due to the existence of cesspits, which are always a standing danger to the inhabitants, and one of the factors tending to a high death-rate by including bowel complaints.

B.—Infantile Mortality.

The returns of the Registrar-General for the year 1903 reveal a most appalling mortality amongst infants.

The mortality of children under one year of age to every thousand children born was for—

(*a*) The whole Colony	205
(*b*) The City of Georgetown	334
(*c*) The Blacks	238
(*d*) The East Indians	171

There can only be one conclusion, and that is the infantile mortality for the whole colony is excessive (in England it ranges from 130 to 140 for every thousand births), but for the city of Georgetown it is appalling.

The time has certainly arrived for active steps to be taken to reduce this terrible loss of infant life.

In Great Britain and other countries measures have been taken which have been attended with considerable success. They consist chiefly in giving practical lessons to the mothers amongst the poorer classes in the care and feeding of young infants; in the establishment of milk depôts where the milk is first sterilised and then put up in bottles each containing a feed. The milk is sold at almost cost price, or given away free to the very poor.

I am convinced that no progress can be made in reducing the mortality until we adopt some such measures; and mothers and others having the charge

of young infants realise that milk is the proper food and not the so-called pap and other abominations on which the helpless babe is fed.

C.—Smallpox Epidemic.

I regret to say that during the year smallpox, fortunately of a comparatively mild type, prevailed throughout the Colony. The disease was introduced here from Trinidad. The Government, recognising the gravity of the situation, practically gave the Surgeon-General a free hand to cope with the epidemic, the combined Court voting the money to meet the expenses.

In order to give every inhabitant of the Colony the chance of being vaccinated, every medical practitioner was appointed a public vaccinator. In the outlying districts where the services of a medical man could not be obtained, competent persons were appointed.

The Public Health Ordinance requires every local authority to provide hospitals for the treatment and isolation of infectious diseases, and as the local authority for Georgetown, which is the Mayor and Town Council, were unable to obtain a suitable site in the city or its immediate vicinity, the Government permitted the quarantine station at "Best" to be used for that purpose. Benabs were erected and equipped at the expense of the Mayor and Town Council for patients from the city, the Town Council, in addition, paying 25 cents a day for the maintenance of each patient.

Dr. Teixeira, one of the assistant medical officers of the Lunatic Asylum, was placed in medical charge.

Patients from the country were treated at the expense of the Colony in the hospital attached to the quarantine station.

The Mayor and Town Council of New Amsterdam and the Town Commissioner of Bartica erected isolation hospitals at New Amsterdam and Bartica respectively for the treatment of cases in their districts. A few cases were isolated by the medical officers in some of the villages.

In only a few isolated instances did the disease appear on the sugar estates, where the inhabitants are chiefly East Indian coolies. When it did it was always in unvaccinated persons, and did not spread. This was due to the fact that the persons afflicted were promptly isolated and also that the coolies are well protected by vaccination.

Vaccination was made compulsory for all "contacts."

The isolation hospital was closed on March 31st, 1904, the last case having been discharged on February 27th, 1904.

There were in all 1,821 cases of smallpox reported, of which 1,434 were treated at the isolation hospital.

There were 14 deaths, which is equivalent to a death-rate of ·7 per cent.

I append a special report by Dr. Teixeira on the cases treated at the isolation hospital at "Best." This report is most valuable and instructive. I take this opportunity of placing on record the valuable services of Dr. Teixeira, the skill with which he treated the cases under his charge, and his zeal in looking after the welfare of every one attached to the isolation hospital.

All the buildings and furniture of the quarantine station used for the purpose of treating cases of smallpox have been thoroughly disinfected and painted.

Appendix C. attached to this report shows the total number of cases of smallpox reported and the parts of the Colony where they existed.

D.—Malarial Fever.

Malarial fever has been prevalent throughout the whole Colony. Now that it has been conclusively proved that malarial fever is caused by the presence in the blood of the malarial parasite known as the *Plasmodium malariæ*, and that this parasite is introduced by a species of mosquito called the Anopheles, every endeavour should be made to guard against this disease.

The methods that have been most successful up to the present are:—

(*a*) The taking of small doses of quinine.

(*b*) The filling up or draining of stagnant pools of water in which the Anopheles breed.

(*c*) The prevention of inoculation by Anopheles by the use of mosquito nets.

If everyone would fill up in the grounds round their residences all places where stagnant water can accumulate, we should considerably reduce the number of these mosquitoes by abolishing their breeding grounds; vats should be enclosed with mosquito-proof wire netting. The larvæ are often to be found in vases and other ornaments used for flowers in the house. A few drops of kerosene oil would kill them.

E.—Ankylostomiasis.

The presence of this disease, due to an intestinal worm (the *Ankylostoma duodenale*), is now generally recognised. This disease has been and is still being introduced into the Colony by East Indian immigrants. That it is on the increase admits of no doubt.

It is hardly too much to say that this parasite causes more harm than all the other intestinal parasites put together; and it is a well-established fact that persons suffering from this disease are liable to be carried off by comparatively slight ailments, the whole system being so debilitated and undermined.

It is especially prevalent among the East Indian immigrants, and I am convinced the estates are yearly losing a considerable amount of labour by it. While on this point it may be of interest to give the following quotation from Manson's book on tropical diseases:—

"Ankylostomiasis is an important disease from the standpoint of the employer of native labour. The invaliding and inefficiency which it causes among coolies, not to mention the deaths, are often financially a serious matter to the planter and the mine owner. To them any wisely directed expense or trouble undertaken for the treating and controlling of this helminthiasis will be abundantly repaid by the increased efficiency of the labourer."

Mode of Infection.—It is spread through the agency of dejecta of people suffering from this disease, the embryos finding their way into the human alimentary canal either by muddy water or in the mud or dirt adhering to the hands or food receptacles of the workmen. They may also be introduced through the skin,

and in my opinion and that of several of the medical officers who have closely studied the subject, the disease known in this colony as "ground itch" is due to the irritation caused by the embryos working their way through the skin. Persons who work in contaminated fields and trenches are the principal sufferers from "ground itch."

It is therefore essential to prevent fæcal contamination of the soil and water by the depositing of fæces about huts and fields. This can best be done by the establishment of latrines of a simple kind and suited to native habits. I am convinced that we shall never make any marked progress in stamping out this disease until this is done.

F.—Tuberculosis.

This disease, according to the returns at my command, has been the cause of 8 per cent. of the total mortality of the Colony for the year, but there are strong grounds for believing that the mortality is higher than this. That pulmonary tuberculosis is on the increase, especially in the city, is beyond doubt.

The mortality in Georgetown from this disease was 13·9 per cent.

It is, I think, universally known that consumption is an infectious disease due to minute germs called the "tubercle bacilli." The phlegm or expectoration of persons suffering from consumption is laden with thousands of these germs, and it is by this means that the disease is conveyed from one person to another. These germs are released as soon as the expectoration dries, and, mixing with the dust, infect the atmosphere.

G.—Diarrhœa and Dysentery.

These diseases were prevalent throughout the year and accounted for 12 per cent. of the total mortality. They are largely due to insanitary surroundings, unwholesome food, and the want of good drinking water.

XII.—Subsidised Nurse-Midwives in Districts.

The question of the appointment of competent midwives in the rural districts seems to have been first raised in October, 1893, but apparently no action was taken in the matter until 1898, when, in consequence of the high mortality of young infants and the large percentage of still-births the combined Court at its annual session, on the suggestion of the late Surgeon-General, passed a vote of $180 for the purpose of locating and subsidising, by the payment of $5 per mensem, eight certified nurse-midwives in villages and rural districts. This vote has been since passed at each annual session of the Court, but for the present financial year the amount has been reduced to $200.

The object was to induce the subsidised nurses to reside in the rural districts or villages, and to give their services free to paupers and to others of limited means at a reduced fee according to tariff.

After they had established a practice, the subsidy would be withdrawn and given to another district, and so on; the number thus employed never to exceed eight.

About the same time it was suggested that the Medical Ordinance, No. 5 of 1886, should be amended as follows:—

(i.) To call these women nurse-midwives or midwifery nurses.

(ii.) To register such women.

(iii.) To make regulations.

(iv.) To cancel or suspend certificates for misconduct, professional or otherwise.

(v.) To protect duly certified midwives by preventing uncertified women from practising.

(vi.) To arrange for the examination of all women practising for five years and upwards.

On October 16th, 1900, the Medical Ordinance was amended by Ordinance No. 32 of 1900, Sections 6 to 11, in which the above suggestions were embodied, with the exception that all women who, on a certificate of a Justice of the Peace, duly qualified medical practitioner, or Poor-Law guardian, satisfy the Medical Board that they were practising previous to that date, were to be certified and registered.

The experiment so far has been a failure. This I attribute to the following reasons:—

By Section 7 of Ordinance 32 of 1900 every person who could produce a certificate of having practised midwifery prior to the framing of this Ordinance received a midwife's certificate from the Medical Board; the consequence was that a large number of incompetent women who had had no training received these certificates and in a way legalised their position. These were the very persons who should have been debarred, and no hardship could have resulted if they had been given a year in which to qualify. The class of persons on whom these women practise are themselves steeped in the grossest ignorance, and seem to prefer the ignorant and incompetent so-called midwives to those who have been properly trained and qualified.

I propose reorganising the whole system of training midwives, and to establish for that purpose schools at the public hospitals of Georgetown, New Amsterdam, and Suddie, to encourage the intelligent women from different parts of the Colony to undergo the course of study with a view of their returning to their districts as duly qualified. This, in my opinion, is a much better plan than sending women into districts who are unknown to the inhabitants. These women, in addition to being trained as midwives, will be taught how to feed the young infant, and by this means I hope to be able to assist in reducing the terrible infantile mortality of this Colony.

XIV.—Financial.

A.—Public Hospitals.

The expenditure of these hospitals is detailed in Tables 4, 5, and 10 attached to this report.

The net daily cost of each patient resident in the public hospital, excluding the charge for medical attendance, but including medicine for out-patients, varied from 25·9 cents (Georgetown Hospital) to $1.13 (Bartica Hospital).

The total cost amounted to $99,804.91, and the sums paid into the Treasury to $9,547.47; thus reducing the net cost to $90,257.44, as against $96,933.86 and $85,671.70, respectively, last year.

B.—Lunatic and Leper Asylums.

The expenditure of these institutions is shown in Tables 8, 9, and 10.

The total cost amounted to $73,043.13, and the revenue to $1,764.02, making the net cost $71,279.11, as against $68,869.57 and $66,285.72, respectively, for last year.

XV.—General Statistics.

Tables 1, 2 and 3, attached to my report, refer to general statistics in connection with public hospitals.

Tables 6 and 7 relate to the Lunatic and Leper Asylums.

XVI.—Total Expenditure.

The following table shows the total expenditure of the Medical Department of the Colony for the year 1903-04:—

Salaries	Surgeon-General ..	$5,280.00
	Medical Inspector ..	4,319.99
	Medical Officers ..	109,770.80
	Special Medical Officers	6,360.00
	Staff, Surgeon-General's Office ..	3,074.83
Travelling Expenses, &c.	Surgeon-General ..	66.94
	Medical Inspector ..	635.08
	Medical Officers ..	9,867.23
Stationery and Messenger, Surgeon-General's Office		380.86
Hospitals		99,804.91
Asylums		73,043.13
* Epidemic of Smallpox, Isolation Hospital and Certificates		7,485.48
* Vaccination		35,459.13
† *Post-mortem* Fees		3,800.00
Allowances, Medical Superintendent, Leper Asylum (in lieu of private practice and personal)		700.00
Resident Surgeon, Public Hospital, Berbice (house allowance, and in lieu of private practice and personal)		876.00
Dispensaries in Districts, including Moruca ..		2,695.09
Nurse-Midwives in Districts		82.42
Medicines for Poor in Rural Districts		374.45
		$364,076.34

Amounts paid into Treasury—		
Hospitals and Asylums		$11,311.49
Dispensaries		437.82
Certificates, Nurse-Midwives		50.00
Lymph disposed of to Private Medical Practitioners		20.80
		$11,820.11
Net Expenditure ..	$352,256.23	

* Extraordinary expenditure due to smallpox epidemic.

† Charged to Administration of Justice.

A.—HOSPITALS.

Table 1.

General Statistics for the Year 1903-04.

Hospital.	No. of inmates on April 1, 1903			Admitted 1903-04			Discharged in 1903-04			Died in 1903-04			Remaining on March 31, 1904.			Daily average number under treatment		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Georgetown	440	208	648	7,840	4,464	12,304	7,128	4,067	11,195	775	417	1,192	377	188	565	427	203	630
Berbice	74	49	123	1,574	864	2,438	1,362	756	2,118	203	109	312	83	48	131	87	45	132
Suddie	41	21	62	932	415	1,347	807	375	1,182	119	50	169	47	11	58	44	20	64
Bartica	6	..	6	197	49	246	178	41	219	18	8	26	7	..	7	4	1	5
Morawhanna ..	9	2	11	450	105	555	425	102	527	24	5	29	10	..	10	13	3	16
Totals ..	570	280	850	10,993	5,897	16,890	9,900	5,341	15,241	1,139	589	1,728	524	247	771	575	272	84

Table 2.

Percentages of Mortality in Public Hospitals, in 1903-04, *on Total Numbers Treated.*

Hospitals.	Percentage. M.	F.	Total.
Georgetown	9·3	8·9	9·2
Berbice	12·3	11·9	12·1
Suddie	12·2	11·4	11·9
Bartica	8·8	16·3	10·3
Morawhanna	5·2	4·6	5·1

TABLE 3.

Classes of Persons Treated and Died in the Public Hospitals of the Colony in 1903-04.

Hospitals	GEORGETOWN						BERBICE						SUDDIE						BARTICA						MORAWHANNA					
Number of Cases	Treated			Died			Treated			Died			Treated			Died			Treated			Died			Treated			Died		
Classes	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Indentured immigrants	467	224	691	26	7	33	16	3	19	..	2	2	5	..	5															
Unindentured immigrants from estates	1,639	322	1,961	127	25	152	231	100	331	40	10	50	167	34	201	42	13	55												
Unindentured immigrants not from estates	912	257	1,169	215	60	275	413	139	552	60	18	78	473	176	649	36	20	56	20	..	20	1	..	1	67	14	81			
Natives of the Colony	2,009	2,677	4,686	275	223	498	600	412	1,012	87	66	153	256	213	469	39	17	56	156	46	202	17	8	25	319	73	392	19	5	24
Others	3,253	1,192	4,445	132	102	234	314	210	524	16	13	29	72	13	85	2	..	2	27	3	30	..	..	..	73	20	93	5	..	5
Totals	8,280	4,672	12,952	775	417	1,192	1,574	864	2,438	203	109	312	973	436	1,409	119	50	169	203	49	252	18	8	26	459	107	566	24	5	29

TABLE 4.

Expenditure for the Year 1903-04.

Hospitals	Wages and salaries	Maintenance	Total	Credit *	Net Cost
Georgetown	$26,099.81	$ 40,006.58	$66,106.39	$6,224.22	$59,882.17
Berbice	6,698.84	12,762.93	19,461.77	2,034.29	17,427.48
Suddie	3,276.74	4,584.13	7,860 87	331.71	7,529.16
Bartica	1,319.82	817.17	2,136.99	59.96	2,077.03
Morawhanna	1,837.34	2,401.55	4,238.89	897.29	3,341.60
Total	$39,247.13	$60,576.28	$99,804.91	$9,547.47	$90,257.44

* Paid to Receiver-General during financial year.

TABLE 5.

Net Daily Cost of each Patient in Hospital, Expenditure on Out-patients included.

Hospitals.	Daily Cost.
Georgetown ..	25·9 cents.
Berbice ..	36 ,,
Suddie .. — Medical attendance alone excepted ..	32·1 ,,
Bartica ..	113 ,,
Morawhanna ..	57·2 ,,

B.—ASYLUMS.

TABLE 6.

General Statistics for the Year 1903-04.

Asylum	No. of inmates on April 1, 1903			Admitted during 1903-04			Discharged during 1903-04			Died during 1903-04			Remaining on March 31, 1904			Daily average No. under treatment.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Lunatic	501	266	767	112	72	184	61	24	85	59	45	104	493	269	762	498	275	773
Leper	335	99	434	89	18	107	50	1	51	62	14	76	312	102	414	323	101	424
Totals	836	365	1,201	201	90	291	111	25	136	121	59	180	805	371	1,176	821	376	1,197

TABLE 7.

Percentage of Mortality, 1903-04.

Asylum	On Daily Average			On Total No. Treated.		
	M.	F.	T.	M.	F.	T.
Lunatic	11·8	16·3	13·4	9·6	13·3	10·9
Leper..	19·2	13·8	17·9	14·6	11·9	14

TABLE 8.

Expenditure for the Year 1903-04.

Asylum	Wages and Salaries	Maintenance	Total	Credit*	Net Cost
Lunatic	$11,663.15	$39,349.84	$51,012.99	$1,737.02	$49,275.97
Leper	4,895.98	17,134.16	22,030.14	27.00	22,003.14
Totals	$16,559.13	$56,484.00	$73,043.13	$1,764.02	$71,279.11

* Paid into Treasury during financial year.

TABLE 9.

Net Daily Cost of each Patient in Asylum.

Lunatic	17·4 cents
Leper	14·1 ,,

C.—COST OF HOSPITALS AND ASYLUMS.

TABLE 10.

Statement of Net Cost of various Institutions.

Institution	1900-1901		1901-1902		1902-1903		1903-1904	
	Cost	No. of patients	Cost	No. of patients	Cost	No. of patients	Cost	No. of patients
Georgetown Hospital	$54,844	8,414	$53,555	9,337	$56,557	10,858	$59,882	12,952
Berbice	18,799	2,289	16,340	2,130	16,681	2,241	17,427	2,561
Suddie..	6,284	713	7,442	1,214	7,504	1,624	7,529	1,409
Bartica	2,100	208	2,019	208	1,956	226	2,077	252
Morawhanna..	3,861	494	3,844	481	3,068	467	3,341	566
Lunatic Asylum	41,847	865	41,974	883	44,564	938	49,275	951
Leper ,, ...	20,750	496	21,787	514	21,732	515	22,003	541

REPORT ON CASES OF SMALLPOX TREATED AT THE ISOLATION HOSPITAL AT THE "BEST."

PUBLIC LUNATIC ASYLUM,
BERBICE,
June 28, 1904.

SIR,

I have the honour to submit for your information the following report of the cases admitted to the Isolation Hospital at "Best" during the recent epidemic of smallpox. The hospital was opened on the 8th of April, 1903, with five patients, and I assumed charge on the 25th, when there were 38 patients. The last admission was on the 21st of February last, and the patient was discharged on the 27th.

The total number of cases by the Register was 1,434, of which 566 were males and 868 females. It will thus be seen that female admissions preponderated greatly over the male, and this may be accounted for (1) because they are more sedentary and "stay-at-home" in their habits; (2) because they are brought more into contact with the disease from nursing and meddlesome curiosity; and (3) from their more rabid aversion to vaccination. The males, on the other hand, live a more outdoor life, and a large number of them under pain of losing their work submit to the operation, however reluctantly.

Races.

The classification of the various races admitted is shown in the subjoined table :—

Portuguese and other whites	49	or	3·41 %
East Indians and descendants	22	,,	1·53 ,,
Aboriginal Indians	24	,,	1·67 ,,
Mixed races (mainly coloured)	120	,,	8·36 ,,
Chinese	1	,,	·06 ,,
Europeans (born in England)	1	,,	·06 ,,
Blacks	1,217	,,	84·86 ,,
Total	1,434		

East Indians.—Ten were immigrants from India, of which *two* came to the Colony as infants, leaving twelve *Creole coolies.*

The immigrants suffered from the following diseases :

Mod. smallpox	3
Scabies	3
Yaws	2
Psoriasis	1
Chickenpox	1
Total	10

Those of East Indian descent and born in the Colony showed the diseases in table below :

Discrete smallpox	9
Chickenpox	1
Scabies	1
Not sick	1
Total	12

On examination it was found that 10 had never been vaccinated, one had been done recently and successfully (admitted with itch) and the last one was admitted with its mother, but not sick—and was successfully vaccinated at the hospital. The "fractional" admission of East Indian Immigrants appears to me conclusive evidence of the efficacy of vaccination, as it is well known that all of them must be vaccinated before embarking for this Colony. A certain number besides this show from the characteristic pitting that they had previously suffered from smallpox in their own country. Not a few "free" coolies *sought* admission direct at the Isolation Hospital—but besides chigoes and scabies nothing like smallpox was ever seen.

Aboriginal Indians. — Sixteen were admitted for further observation owing to their developing a suspicious rash some days after vaccination in Georgetown. I was at first inclined to the view that this rash might be of the nature of post-vaccinal erythema, as observed in a recent epidemic or rather outbreak in Scotland, but I soon found that everything was against such. For one thing, there was no seeming connection between vaccination and the rash, the post-vaccinal date of the rash was against it and *they all* had the rash, which would have been a phenomenal condition of things. Only those exposed parts of the body showed any marks—and I could come to no other conclusion than that their own explanation was the right one, namely, that the rash was due to mosquito bites and possibly other insects. In support of this view I may state that Mr. Wauklyn in his annual report for 1902 returned seven cases as due to *vermin bites*, or 1·1 per cent. of 607 admitted to hospital but not suffering from smallpox. As, with the exception of three or four, no sign of reaction to vaccination showed on admission, I revaccinated and discharged as soon as a good crop of vesicles became evident at the site of vaccination.

The remaining eight suffered more or less severely from smallpox ; one, Ada S., was in hospital 108 days, the record, and a more or less physical wreck on discharge.

The following table shows the age incidence of those admitted :—

0 to 5	127	or	8·85 %
5 ,, 10	91	,,	6·34 ,,
10 ,, 20	384	,,	26·77 ,,
20 ,, 30	489	,,	34·10 ,,
30 ,, 40	198	,,	13·80 ,,
40 and up	145	,,	10·11 ,,
Total	1,434		

One patient gave her age at 112 ; several were well over 70.

A glance at this table shows clearly that it was essentially adults who were treated for smallpox at the hospital. Infants suffered severely as a rule.

The number of persons who on admission were vaccinated is as follows :—

Vaccinated in infancy	59	or	4·11 %
,, childhood	56	,,	3·90 ,,
,, under ten years ago	57	,,	3·92 ,,
,, over ,, ,,	2	,,	·18 ,,
,, during incubation period	29	,,	2·02 ,,
	203		
Never vaccinated	1,231	,,	85·84 ,,
Total	1,434		

Of those vaccinated "under 10 years ago" twenty-three were done unsuccessfully, and twenty-one successfully *during* the epidemic.

Twenty-nine were vaccinated during the incubation stage of smallpox, the time varying from a few hours to a few days prior to the onset of symptoms of invasion. Although the disease was unmodified where the vaccination had been successful, the two conditions ran their course together, in some instances the vaccination appeared to become aggravated and the resulting scars assumed a keloid form. In some of the *successful* cases the resulting cicatrices were not only not foveated but appeared to me unsatisfactory and of little value as protection against the prevailing disease.

Diseases, other than smallpox are shown below—and I have also included in the table 39 cases in which no ascertainable disease could be made out.

Yaws	Varicella	Scabies	Lichen	Measles	Syphilis	Marasmus	Acne	Mod. smallpox	Not sick
3	18	7	4	1	1	1	2*	28	39

* The same case readmitted.

This gives a total of 104, to which must be added 285[1] cases of confluent smallpox and 1,045[1] of the discrete form of the disease, to bring the total to 1,434.

[1] On 1,330 cases of smallpox { 21·42 % / 78·57 ,,

The total number of smallpox cases therefore is 1,330. The case of marasmus was that of an infant admitted with its mother and died soon after admission. The case of acne[1] was that of a youthful adolescent with evidences of his dirty habits in the form of scabies and chigoes as well as acne. The acne was the typical acne seborrhoea or "blackheads."

I vaccinated the case of secondary syphilis with success, and there was no doubt as to the nature of this disease. The case of measles was in a child that had been successfully vaccinated by Dr. Wishart recently.

With the exception of the case of yaws, it is somewhat remarkable that the table above shows a similarity of diseases (other than smallpox) as given in Mr. Wauklyn's table in his report previously mentioned.

As not sick I include children admitted with their parents and *vice versâ*: I have placed modified smallpox perhaps wrongly on list, but I wished to account for the remaining cases of smallpox pure and simple. The symptoms of invasion, &c., of modified smallpox are exactly similar to those of the unmodified disease, the main distinction being in the behaviour and course of the rash subsequent to their appearance, and of course the much reduced mortality. I saw no case of recurrence of the disease in the same patient.

The number and nature of *complications and sequelæ* as noted by me are given above. Under "abscesses" I have included multiple abscess as well as single. Where delirium is mentioned I mean delirium after admission. Many patients had this symptom before they were sent into hospital as well.

These complications are quite characteristic of smallpox.

I have omitted to include in this list the cases of *mania*, in all 5; three recovered in time to be discharged from the hospital, two were sent to the public Lunatic Asylum. I understand there are at present two more in this institution, one having become insane some time after her discharge from the "Best"; the other soon after recovery in her own home (*had smallpox at home and not sent to isolation hospital*). Further, I may observe that *hysteria* was not an uncommon condition noted during convalescence in females.

Boils	51	Severe—many others—attention not drawn because trivial.
Adenitis	161	Painful glandular enlargements, some suppuration, especially in groins.
Orchitis	8	In adults and the aged.
Conjunctivis	16	One case of marked ulceration of cornea—several mild keratitis.
Abscesses	97	Generally of thigh.
Tuberculosis	1	Probably pre-existent, but agravated and ending rapidly fatal.
Bright's	7	Albuminuria with œdema of limbs refractory to treatment.
Paresis of bladder	2	Temporary, with some paraplegia and incontinence.
Pneumonia	3	One death.
Delirium	3	One death—John Henry, probably case of hæmorrhagic smallpox.
Sloughing abscess	5	Of considerable magnitude with much asthenia.
Mammary ,,	4	With one death, abscess a complication (phagedæna).
Enteritis	6	Well-marked diarrhœa, in convalescence.
Menorrhagia	1	With much dysmenorrhœa.
Cervical cellulitis	1	Very bad case, operation performed.
Abortion	1	Four months pregnant.
Pleurisy	1	Dry—not severe.
Œdema of larynx	1	With some glossitis, much dyspnœa and oppression.
Alopecia	1	Marked baldness in a case of confluent smallpox.
	370	Or 27·81 per cent. of smallpox cases (1,330).

Vaccinations.

Altogether 287 vaccinations were performed by me at the isolation hospital. From this number, however, must be deducted 52 done on labourers, artisans, and others employed temporarily within the precincts of the station. Of the remaining 235, the successful cases amount to 64, the unsuccessful 166, and doubtful 5. The successful cases include admissions in which nothing in the nature of smallpox was diagnosed, children admitted with their parents, but without sign of disease on them, or parents with sick children, &c. These were, as stated in my first report, used as controls against the unsuccessful cases (all of which were persons convalescing from smallpox). It is evident that 64 cases were saved from smallpox by vaccination at the hospital.

[1] Vaccinated successfully.

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"In India, it will be observed, where malarial fever occurs, there, skin diseases and entozoa will also be found to prevail. The more virulent the type of malaria the worse the forms of skin disease and entozoa as regards obstinacy to treatment and expulsion from the body.

"Regarding the suggestion of malarial inoculation for cancer, it has not been shown that Europeans who suffer from malarial fever are immune against cancer."

I find that my contention in my monograph on cancer to the India Office, and my *brochure* above mentioned, are supported by the JOURNAL OF TROPICAL MEDICINE and the *Indian Medical Gazette*, and as I am in as strong a position, if not stronger, than I ever was in my declarations as to the origin of cancer, which is based, not on mere theory, but on facts, I feel I must draw attention to certain matters already published in your Journal, and in the *British Medical Journal*, which support my views as to the relative prevalence of cancer in tropical and temperate regions respectively.

We are told, in the JOURNAL OF TROPICAL MEDICINE for March 1st, 1905, that carcinoma and sarcoma are difficult to diagnose and determine by clinical methods, and that microscopic examinations are but occasionally possible in districts remote from medical centres. It is probable, we are further told, "that sarcoma, although rare in the Tropics, is yet more commonly met with than is carcinoma, but neither the one nor the other occurs excepting occasionally, and it would seem as though malignant diseases, like some other ailments, diminish in frequency as the Equator is approached from the north." That Journal further informs us of the absence or rarity of cancer among the natives of the African continent; but in St. Helena and Mauritius cases of carcinoma are reported, some three or four cases yearly in a population of 3,000 to 4,000, and this is accounted for because of the "heterogeneous or mixed population" (whatever that means), as you do not define what their origin is, and as you doubtless will see the necessity of being more exact after reading my subsequent remarks, and after perusal of the statistics from the *Indian Medical Gazette* for May, 1902, extracted from the *British Medical Journal* of June 28th, 1902.

Then, again, your Journal's reports from Asia "are said to be meagre"; no cancer in Wei-hai-wei; but in Ceylon the number of cases is about 220 annually. Sarcoma is said to be more uncommon in Ceylon than carcinoma. It is subtropical.

In Australasian reports, we learn from the same Journal, that the aborigines in Queensland and in the islands of the Pacific do not suffer from "malignant disease" (a term bequeathed to us, I regret to say, from the days when the influence of *malign spirits* reigned in the minds of the ignorant in cases of small pox and scarlet fever epidemics, which were supposed to be due to these phantom causes), and "only one case of cancer," we are told, "occurred in British New Guinea."

As to the West Indies, cancer is said not to be so common as in England, in Grenada, Leeward Islands, and British Honduras.

Your Journal then asks the questions:—

(1) "Do British emigrants resident in Crown Colonies suffer more or less from malignant disease" (again this unfortunate term is used) "than do people resident in Britain?"

(2) "Does the half-caste population suffer from the disease more than do either their white or coloured co-residents, and have mixed populations, whatever the parentage, a tendency to the disease?"

(3) "There is some evidence that Eurasians suffer from malignant diseases to a greater extent than do pure-bred natives, and that white people in the Tropics are less likely to be attacked than are their relatives at home." Unfortunately the third point which I have separated under (3) is a continuation in your Journal of (2) and a continuation which might mislead scientific investigators.

Before publishing the statistics from the pages of the *British Medical Journal* to show the nature of (2) and (3) from the point of a scientific enquiry, I think it is well to abandon the term "malignant," for the reasons I have given in the above with regard to "malign spirits" and their connection with small pox and scarlet fever in severe epidemic form in the minds of some. Then with regard to the term as applied to sarcoma and carcinoma, I have felt that it were better to adhere to the nomenclature medically, since the one disease microscopically and by age incidence has been quite settled by the profession as being apart from one another. Sarcoma is connected with young people under 30 years of age, and is a neoplasm or growth from connective tissues, as the pictures depict under the microscope; carcinoma, in people over that age, and more so at middle life, and is cellular in origin, rapid epithelial proliferation with rapid degeneration and necrosis in the centre of the growth with rapid erosion at the periphery. I feel it is highly essential that we should be clear on all points connected with sarcoma and carcinoma differentially to be in a position to prove what carcinoma is, and its origin.

Before commenting or answering the queries in your Journal, let us turn to the statistics published in the pages of the *British Medical Journal* for June 28th, 1902, which are by no means meagre, and are said to have been extracted from the *Indian Medical Gazette*. It differentiates sarcoma from carcinoma, and also the varieties of cancer from each other, and from rodent cancer or ulcer.

Turning to para. 2, we learn that the percentage of cases in proportion to the total admissions occurring in the different races, carcinoma and sarcoma are more frequently met with in Hindus (1·98 and 0·67 per cent. respectively). Next come Europeans, with 1·16 and 0·89, and lastly Eurasians with 0·34 and 0·05 per cent. respectively. It is also stated that it was not found possible to classify the Hindus according to the different castes; but that Brahmins do undoubtedly suffer from cancer and other forms of "malignant disease" (here again this objectionable term) not at all rarely. These maintain what I have said before with regard to cancer in India in my *brochure* above quoted, that the low-caste Hindus suffer more from this disease than the high caste, and that sarcoma is more common than carcinoma. As to Brahmins suffering from cancer, there can be no doubt that they do in some cases, and other forms of "malignant disease," not at all rarely; but there are several divisions among Brahmins, some of whom are allowed to eat flesh, to smoke, and to indulge in alcohol. When the term "Brahmin" is used, it applies to all those of the priest caste; but it does not say whether they are "Gaur" Brahmins, "Kanaujias," or what set of Brahmin—Bhattarcharga's book gives them all,

Then with regard to your remarks on Eurasians suffering more from malignant disease and to a greater extent than pure-bred natives, they certainly appear to do so in the Crown Colonies as compared with India, and it is necessary to sift the evidence before us, and ask two more questions in addition to those you have already put, namely:—

(5) Are the "half-caste" population in the British colonies and the "mixed populations" considered Eurasians or pure-bred natives? If the former, then, according to your statistics above given, the answer is from your own statements that "there is evidence that Eurasians suffer from malignant diseases to a greater extent than do pure-bred natives"; but if the latter, then your own statement classifies them among "pure-bred natives," which apparently the *British Medical Journal* and the *Indian Medical Gazette* do; hence their immunity like the pure-bred natives from cancer. Your statistics from this point of view bring them nearer to Europeans.

(6) Does every mixed people claim to be an Eurasian, and cannot some Eurasians claim to be Europeans? To this I would say that every native of whatever country or origin can claim naturalisation if he choose; but if he choose to don a billy-cock hat and a pair of patent leather shoes, he

comes short of the requirements of the laws of naturalisation. Some pure-bred natives have endeavoured to claim their right to the exchange compensation allowance given to Europeans in India on the ground of naturalisation, and I believe it was strongly contested at the India Office. But Eurasians who by birth, standard of living, education and social status, are entitled to the same privileges and advantages, as they share in disease also with their European brethren, I think, ought to be distinctly classified in your Journal for the sake of a clear definition as to whether they suffer more from poverty and degradation, because some are inclined to thrust them down to a lower scale than Nature has intended them to occupy, and which they only desire to place before you in the interests of science and the human race, not because they have been doubtfully classified elsewhere, but unfortunately in the tropical hothouse of the JOURNAL OF TROPICAL MEDICINE. Are they more fit to be phyto or zooparasites?

I think that Mr. Chamberlain deals more considerately and kindly with his aërial and terrestial orchids at Highbury, with every due consideration to their respective and individual wants as to temperature, moisture, water, &c. One of the greatest of writers has told us that, in order to attain to the highest qualities of people, you must strive to aim at seeing the highest advantages of the class system of classification and not the caste system. The one has no colour or creed, the other is all colour and creed; the one uplifts without distinction of race, and dwells only upon the central power which distinguishes man from the brute creation; the other drives man downwards, and believes in his transmigration to the animal. The one possesses brain as well as soul, the other strives to cultivate brain without a soul. He then said: "I have done, my part is concluded, take it and examine it with all the enlightened powers of a just, honourable and truthful assembly. Other things will fade and perish, but truth and justice must flourish immortal even after this globe be burnt to ashes. 'Twere better to have cremation than incrimination."

Before I can bring before you every evidence in support of my theory of cancer, its origin and treatment, which are based on certain facts and not "the baseless fabric of a vision," I ask you to take and examine my remarks and see whether they are strictly true and just, and serve what is intended for scientific purposes, and towards an end which we all as medical men strive for and wish our fellowmen to strive after in the interests of the human race and family, for the uplifting of mankind by the class system of classification and not the downtrodden influences of caste.

I would ask publication of this letter in the truest interests of science and for the abandonment of terms which are as degrading as outcast, and which savour more of malign spirits than of medicine and its grand mission. "Conquer by love and by truth is our motto."

Believe me, yours very truly,

G. H. FINK, Major I.M.S., M.R.C.S., L.S.A.

Reviews.

HINTS TO NURSES ON TROPICAL FEVERS. By S. F. Pollard, Sister, Army Nursing Service Reserve; late Sister at Guy's Hospital. London: The Scientific Press, Limited, 28 and 29, Southampton Street, Strand. 1905. Pp. 57. Price 1s. 6d. net.

For the department of nursing dealing with tropical ailments it is advisable—in fact, necessary—to have a special text-book. Sister Pollard has supplied the requisite information in a book entitled "Hints to Nurses on Tropical Fevers." Of the ten chapters into which the book is divided, one that will be scanned very closely by nurses preparing to go abroad for the first time, is the opening chapter on "Hints on Going Abroad." The maximum of necessities it is evidently Sister Pollard's intention to give, and it is perhaps well to do so; the nurse, however, with a slender purse must not be discouraged if she cannot afford to get all the things mentioned as advantageous to her comfort on starting for abroad. In Chapter II. the nurse will find a condensed and readily understood account of the symptoms, prophylaxis, and the treatment of malaria. Still more important, from the nursing point of view, is the chapter on dysentery, for this disease calls for the closest attention and the utmost skill on the part of the nurse. The signs and symptoms of liver abscess are given in Chapter IV., and the instructions to the nurse, what she is to observe and what to record, are excellent. Chapter V. deals with cholera; and Chapters VI., VII., and VIII. are devoted to bubonic plague, beri-beri and yellow fever respectively. The chapter on Malta fever will have special significance for nurses taking up duty on the Mediterranean littoral. The last chapter is devoted to dengue, prickly heat, and typho-malaria. It will be seen from this brief summary of the contents that all the serious ailments the nurse is likely to meet with in warm climates are described and commented upon. With this book not only can the nurse become acquainted with the technicalities of nursing required in tropical diseases, but the information is conveyed in language so lucid and terse that the several diseases, their cause, their signs and symptoms, the means of arresting their spread, as well as an explanation of their rational treatment, can be readily understood To all persons also with families in the tropics this excellent book will commend itself, and should find a large and ready sale amongst them.

"L'Echo Médical du Nord," February 26, 1905.

Treatment of Tropical Sore. F. Malmejac. From experience at Biskra the author finds the best local treatment is boiled distilled water at a temperature of 60° C. (140° F.). When crusts are present a stream of water is directed on to them, especially into the edges and cracks. A dry antiseptic dressing is then applied. The sores are dressed twice a day for a week; the crusts usually separate in two or three days. At the end of a week only one dressing a day is required. T. P. B.

"Revista Medica de S. Paulo," February 15, 1905.

Tubercle and Ankylostomiasis. A. Mendonca. Of 800 patients admitted to hospital, 56 (7 per cent.) had tubercle, 147 (18·37 per cent.) had ankylostomiasis. The faeces of all patients are examined. The treatment consists in 6 grammes (ʒiss.) of thymol in six capsules, the dose being given three times at weekly intervals. Smaller doses are given if albuminuria is present. The cure is completed by iron and arsenic. T. P. B.

AUSTRALIA.

Dengue Fever.—In Brisbane, Ipswich, Townsville, and in several other towns of Queensland, a widespread epidemic of dengue fever prevailed during March 1905. The epidemic was so severe that business was seriously interfered with, in Brisbane as many as one-third of the population being prostrated by the disease at one period. Although dengue fever has occurred in Queensland before, during no previous outbreak has it prevailed to so great an extent in the more southerly parts—that is, the cooler parts of the State.

Plague.—Cases of plague were reported from Brisbane and Newcastle during March and April of this year.

Plague and Rats.—The connection between plague and rats has been insisted upon by Dr. J. Ashburton Thompson, President of the Board of Health of New South Wales; and the outbreaks of plague have been largely fought by the destruction of rats. Success seems to have resulted from the measures adopted. As evidence of the persistency of plague, despite the fact that the disease seemed to have disappeared from amongst both men and rats for a considerable period—the city of Sydney for eight and a half months (July 14th, 1902, to April 30th, 1903) was free from plague in men, and apparently in rats—although some 17,000 rats were examined in the laboratory during that period. On May 12th, 1903, however, a plague-infected rat was found, and between that date and August 15th, 1903, 111 rats and fifty mice were found to be plague infected. During the recurrence of plague amongst rats two cases of the disease were found in human beings. Dr. Thompson is of opinion that rats may be more widely attacked than the evidence afforded by rat-catching would indicate, as an animal suffering from the disease is likely to die in its hole or run rather than be caught in a trap.

Notes and News.

The Club System in South Africa.—The medical men in Pretoria wish to prevent the introduction of contract practice and the club system of medical relief into that city. An attempt, it is understood, is being made by a section of the community to obtain the services of a medical man for the work from this country. It is well to let it be known that any intending applicant for the post will be running contrary to the wishes of his medical brethren in Pretoria. Hitherto appeals of the kind have seldom had a deterrent effect upon a certain class of the medical profession; on this occasion, however, let us hope the appeal may not be in vain.

The annual dinner of the Epidemiological Society will be held at the Grand Hotel, Trafalgar Square, on Friday, June 30th, at 7.15 p.m., Dr. B. A. Whitelegge, C.B., F.R.C.P., H.M. Chief Inspector of Factories and the President of the Society, in the chair. Applications for tickets to be made to the Honorary Secretaries, Drs. H. Timbrell Bulstrode and W. H. Hamer.

Plague in India.—Sir Walter Foster, in the House of Commons on Friday, May 12th, asked the Secretary of State for India for the return of deaths from plague in India during the past two months. Mr. Brodrick replied that the returns for the month of March had not yet been received, but that during the four weeks ending April 1st the deaths from the disease numbered 60,046.

The Comparascope.—At the conversazione held in the rooms of the Royal Society on May 17th, Mr. D. Finlayson showed the Comparascope, an accessory to microscopic investigation, by which direct comparisons can be drawn between microscopic objects. The mechanism is designed to bring into focus the objects in two separate slides side by side in the field of vision, so that an exact comparison between the two sets of objects can be simultaneously obtained. The instrument should be of value in determining differences between bacteria and other microscopic objects that closely resemble each other.

Travelling Ophthalmic Hospital in Egypt.—The relief of ophthalmia in Egypt, which was provided for by a gift of £40,000, made by Sir Ernest Cassel, in 1902, has been attempted with great success. Mr. F. A. MacCallan has had charge of the measures, consisting of a travelling ophthalmic hospital. Lord Cromer, in his report for 1904, states that "the experiment has proved a complete success." Over 3,000 patients were treated at the hospital and and 1,268 operations, chiefly for trachoma, were performed.

The Effects upon Development of Different Temperatures.—An interesting account of experiments made by Professor Standfus, of Zurich, upon variations of type caused by exposing ordinary caterpillars in the different stages of metamorphoses to temperatures varying from 40° C. to 4° C. (99° to 25° F.) is at present occupying attention. Most of the caterpillars developed into butterflies of different type to their immediate primogenitures, some "throwing back" to adults of ancient species, whilst still more interesting is the announcement that others developed into totally new species so far unknown to scientists. If the record is true, it would seem that we are at the threshold of an important and quite new method and type of scientific investigation, not only as regards butterflies and affiliated creatures, but, it may be, for the whole of the animal kingdom. The effect of exposure to variation in temperature on living things may possibly also extend to other circumstances of environment, such as dryness, moisture, the presence in the air of certain gases, or in the soil and food of particular salts during development. The field for observation and experiment is practically illimitable, and it would be well were some insect, such, for instance, as the mosquito, dealt with on the lines initiated by Professor Standfus. These observations serve to suggest proof by laboratory experiment of the evolution of species.

New Drugs.

EUDRENINE.—Parke, Davis and Company, 111, Queen Victoria Street, London, E.C., have supplied a mixture under the trade-mark name of "Eudrenine," to serve as a local anæsthetic and hæmostatic for the painless and bloodless extraction of teeth, and for use in general surgery. Eudrenine contains $\frac{1}{6}$ gr. (0·01 gm.) of beta-eucaine hydrochloride, and $\frac{1}{2000}$ gr. (0·033 mgm.) of adrenalin chloride (takamine) in each cc. (16·9 minims). For tooth extraction it can be used undiluted by injecting into the gum, ten minutes before operating, the contents of one or two ampoules (8 to 17 minims), according to the number of teeth to be extracted. For small surgical operations Eudrenine may be used undiluted, but where a large area requires to be anæsthetised it may be diluted with four volumes of physiological sodium chloride solution. The combination of eucaine and adrenalin has revolutionised minor surgical operations, allowing the surgeon to operate single-handed, a most important factor in country practice, and still more so in tropical countries, where even the assistance of a medical neighbour it is frequently impossible to obtain. Eudrenine for the medical practitioner will be found to be at once handy for use and satisfactory in its effects.

The British Pharmacal Company, 12, Furnival Street, Holborn Bars, London, have brought out in conule (Setteries) form a compound termed "Ephedrin" for rectal use in hæmorrhoids, anal fissure and pruritus ani. "Ephedrin" consists of the active principle of suprarenal gland combined with æsculin, the native principle of horse-chestnut bark.

So far as our observations have gone, the Ephedrin conules in cases of, so-called, tropical ulcer of the rectum are most efficacious in speedily allaying the severe pain which follows defæcation in these cases.

Messrs. Martindale, 10, New Cavendish Street, London, W., supply the subjoined drugs.

IODIC ACID is a deodorant and preservative, even when diluted to the extent of a 1 in 2,500 solution. It is employed in ozæna, for deodorising offensive urine, as an irrigant in empyema (strength 1 in 500) and for leg ulcers, as a mouth-wash, *e.g.*, in inoperable epithelioma, and as a throat swabbing in diphtheria. It was found very useful in a case of extensive burning (1 in 500 solution). Internally a drachm of a 1 in 100 solution well diluted has been given in gastro-intestinal sepsis; it has further proved of value administered internally in typhoid fever. The calcium salt has been principally employed up to the present.

CALCIUM IODATE (zinc iodate is similarly used) is useful as a dusting powder. An ointment containing 10 to 20 grains to the ounce of hydrocarbon base is valuable. A lotion is employed in septic and suppurating wounds, and a gauze (3 per cent. strength) may be used for the same purpose. Healing ensues with the production of a dry scab.

A warm saturated solution is used as a vaginal douche or bladder irrigant, This iodate is eminently efficient as a mouth-wash or gargle. There is a field of usefulness for it in dentistry, *e.g.*, in pyorrhœa alveolaris, &c.

An ointment, 10 grains to the ounce, has been found to be a veritable specific in various forms of eczema. A solution is further useful as an irrigant in otorrhœa. Hypodermic injections of from $\frac{1}{2}$ to 2 drachms of an emulsion of 3 drachms of the iodate in an ounce of glycerin have been used in tuberculous joints.

MERCURIC IODATE contains 46 per cent. of available iodine. As a general antiseptic it is probably more efficient than either mercuric perchloride or biniodide.

In a pronounced sycosis of hairy parts of the face an ointment containing 20 grains to the ounce produced an effectual cure.

BISMUTH SUBIODATE has been used in lupus in powder form and ointment, 20 grains to the ounce, and in scrofulous glands as a dusting powder.

(See *Lancet*, January 21st, 1905.)

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"British Medical Journal," May 13, 1905.

1. The Logical Basis of the Sanitary Policy of Mosquito Reduction. An Address delivered at the Section of Preventive Medicine of the International Congress of Arts and Sciences, Universal Exposition, St. Louis, September, 1904. By Ronald Ross, C.B., F.R.S.

2. The Plague in India. Medical Notes in Parliament.

(1) Ross deals in detail with the new sanitary policy which aims at the reduction of disease-bearing insects, especially those which are the disseminating agents of malaria, yellow fever and filariasis.

His conclusions are:—

(*a*) The mosquito density will always be reduced, not only within the area of operations, but to a distance equal to the ideal limit of migration beyond it.

(*b*) On the boundary of operations the mosquito density should always be reduced to about one-half the normal density.

(*c*) The curve of density will rise rapidly outside the boundary, and will fall rapidly inside it.

(*d*) As immigration into an area of operations must always be at the expense of the mosquito population immediately outside it, the average density of the whole area affected by the operations must be the same as if no immigration at all had taken place.

(*e*) As a general rule for practical purposes, if the area of operations be of any considerable size, immigration will not very materially affect the result.

In conclusion, it must be repeated that the whole

subject of mosquito reduction cannot be scientifically examined without mathematical analysis. The subject is really a part of the mathematical theory of migration—a theory which, so far as I know, has not yet been discussed. It is not possible to make satisfactory experiments on the influx, efflux, and varying density of mosquitoes without such an analysis, and one, I may add, far more minute than has been attempted here. The subject has suffered much at the hands of those who have attempted experiments without adequate preliminary consideration, and whose opinions or results have seriously impeded the obviously useful and practical sanitary policy referred to. The statement, so frequently made, that local anti-propagation measures must always be useless owing to immigration from outside is equivalent to saying that the population of the United States would remain the same even if the birth-rate were to be reduced to zero. In a recent experiment at Mian Mir in India the astounding result was obtained that the mosquito density was, if anything, increased by the anti-propagation measures, which is equivalent to saying that the population of the United States would be increased by the abolition of the birth-rate. In the meantime I, for one, must continue to believe the somewhat self-evident theory that anti-propagation measures must always reduce the mosquito density, even if the results at Havana, Ismailia, Klang, Port Swettenham, and other places are not accepted as irrefragable experimental proof of it.

(2) On Monday Mr. Herbert Roberts asked the Secretary of State for India what was the estimated cost of the scientific investigation into plague in India, and what proportion of this expenditure would be borne by the British Treasury; whether he would state what success had attended the work on Dr. Haffkine's system; whether the scientific expedition would have its headquarters at the Pasteur Institute at Kassauli; and whether the present investigation would proceed on the line of bacteriological research. Mr. Brodrick replied that the expenditure was estimated at £5,000 for the current year. No portion would be borne by the British Treasury. Inoculation was a valuable preventive but it was not popular, and its effects were not regarded as permanent. The question as to the headquarters of the expedition would be settled locally between the Government of India and the head of the expedition, while the line of investigation would be determined by the scientific societies controlling the work. He had no doubt that bacteriological research would be largely resorted to. In answer to a further question respecting the congested states of the towns affected, Mr. Brodrick said that in Bombay and Calcutta, where the congestion was most serious, the Government was actively promoting the provision of additional building accommodation for the poorer classes. Elsewhere such overcrowding as existed was due to the habits and predilections of the people rather than to absence of building land or dearness of materials. In plague-stricken localities assistance to move was often offered to the inhabitants but was not seldom refused.

"British Medical Journal," May 20, 1905.

1. Treatment of Sea-Sickness. By J. Metcalfe Sharpe.

2. The Identification of Mosquitoes. By W. Scott Patton, M.B., Lieut. I.M.S.

3. The Aims of Tropical Medicine, Leader.

(1) Sharpe considers sea-sickness to be due to a nervous vomiting; the reflex action is transmitted by the vagi to the solar plexus. Taking this as the basis for evolving a mode of treatment on scientific lines. Sharpe finds that by paralysing the accommodation of one eye the symptoms of sea-sickness were greatly ameliorated. He applies two or three drops of a solution of atropine (4 grs. to the ounce) or other mydriatic to the conjunctiva of one eye daily after a satisfactory examination with the ophthalmoscope, &c. When the passenger objects to having the pupil thus dilated, Sharpe merely bandaged one eye. By thus altering the principal focus, the motion of objects on board ship, which Sharpe considers to be the active impulse in producing sea-sickness, is not uniformly transmitted to the brain. Administration of soporifics and general depressants are condemned; but if chloral hydrate has to be used, it is best given in 20 to 30-grain doses *per rectum*.

(2) Patton states that the Anopheles which is the carrier of malaria in the Aden district is *Anopheles arabiensis*, a species new to literature. There are no Anopheles of the genus *Cellia* in the Aden district. The *Anopheles wellcomei*, as announced by Mr. Theobald, is not identical with the *Anopheles arabiensis* (Patton). Lieut. Patton, writing from Jubbulpore, India, claims to have found five new Anopheles, and a description of these is promised at an early date.

"Journal American Association," February 25, 1905.

Plague and late Cholera Epidemic in the Philippine Islands.

Dr. Paul C. Freer, Superintendent of Laboratories of the Philippine Islands, states that the Philippine Islands were visited by two cholera epidemics before American occupation, one in 1882 and the other in 1888, and in these years the mortality was very high. During both of these epidemics Manila had no water supply except from wells, and it was after the second epidemic of 1888 that one of the former Governor-Generals gave a donation to start the Manila water supply works, which was completed afterwards. The third cholera epidemic occurred during the American occupation and about three years after Americans landed on the islands. Dr. Freer referred to the organisations in the Philippine Islands and the scant means at hand for limiting the epidemic. In order to secure complete co-operation the Philippine Commission established the Board of Health. The city of Manila was divided into seven districts, each in charge of a medical officer taken from the contract medical service. These officers, together with a corps of medical inspectors, began a system of house-to-house inspection. At this time the most serious disease was bubonic plague. Although the number had diminished markedly since American occupation, a recrudescence of the epidemic was feared. Many of the facilities acquired for controlling the plague epidemic were put to good use subsequently in dealing with cholera. Large barracks were constructed which would hold 2,500 people. When plague occurred in a house the patients were

taken from it to the hospital, thus leaving the premises free for disinfection, &c. About December, 1901, three months after the plan was first discussed, there were constructed six barracks which accommodated a thousand people comfortably, and during the cholera epidemic they took in as many as 2,400 at one time. Whenever plague was suspected in a certain house a member of the laboratory staff was called in for diagnosis, and if the case proved to be plague the patient was taken to the hospital, or, if dead, to the morgue, and a radical alteration of the house undertaken; either its destruction by fire, if beyond repair, or complete rebuilding. It became necessary to destroy and rebuild whole districts in the city, and in this way plague was eradicated completely from the districts where it was prevalent. The main weapon against plague was the destruction of rats. In the first month the Board of Health destroyed about 2,000 rats, after which the number ran up to 20,000 a month. Fifty thousand rats were caught in the first three months. A large number of rats were examined at the laboratory for the plague bacillus. Two hundred and seventy-two rats were found to be infected with plague and had come from various houses. One-half of these houses were disinfected, burned down, if necessary, or altered. They managed to diminish the number of cases of plague by these measures, so that in March, 1902, there was not a case of plague in the city, nor had there been one for three weeks.

Cholera patients were isolated in a contagious disease hospital. The houses in which cholera was most prevalent were burned first and the property appraised afterwards. Two thousand people were taken out of the infected district and transported in waggons, ambulances, &c. The number of cases soon diminished, until finally the disease was entirely controlled and eventually wiped out.

A serum laboratory has been established which produces all of the antitoxins and sera necessary for work in the Tropics, including rinderpest serum. The Board of Health has procured new ambulances, has enlarged its disinfecting corps, and has perfected district organisation.

"The Journal of the American Medical Association," April 1, 1905.

1. Lecithin—Its Possible *Rôle* in Radiotherapy. Leader.

2. Acute Meningitis. By W. T. Councilman, M.D.

(1) Kyes has pointed out that Lecithin may act as a complement in hæmolysis produced by cobra venom, thus playing a *rôle* analogous to that of a ferment.

(2) Councilman in an able paper states that the *Diplococcus intracellularis meningitidis*, as first demonstrated by Jäger in 1865, is the specific cause of acute epidemic cerebro-spinal meningitis. The organism was first described, however, by Weichselbaum in 1887 as a specific micrococcus resembling the gonococcus.

Councilman remarks that "the organism is one which is cultivated with difficulty. Morphologically, the organisms appear as diplococci occurring as paired hemispheres, separated by well-marked, unstained intervals, and showing in cultures considerable variation in size. There is a tendency to grouping in fours, or tetrads. In cover-glass preparations from the meningeal exudate, the diplococcus is frequently situated inside leucocytes and sometimes within the nucleus. The appearance is very much like that of gonorrhœal pus. The organism is decolourised by the Gram method of staining; in cultures it grows best on blood serum. The colonies are round, colourless, slightly convex or flat, moist and viscid-looking; they may become confluent. The organism has feeble vitality and dies out quickly under cultivation. It has a weak pathogenesis for laboratory animals. The cultures vary in virulence in certain cases; 1 cc. of a bouillon suspension of a twenty-four-hour blood serum collected and injected intraperitoneally in a guinea-pig will kill the animal in forty-eight hours."

The disease seems to prevail in Massachusetts, U.S.A., with peculiar pertinacity. Danielsen and Mann described the disease in that State as long ago as 1806, and there have occurred four epidemics since then, namely, in 1809, 1864, 1874 and 1897. Between the epidemics sporadic cases occur; the months of April, May and June being the time of the year when deaths from this cause are mostly recorded. The number of cases during recent years were as follows: 1897, cases 355; 1898, cases 259; 1899, cases 240: 1900, cases 165; in 1901, cases 176; and in 1902, cases 165.

Examination of the nasal secretion has in several recorded cases of cerebro-spinal meningitis exhibited the presence of the *Diplococcus intracellularis*, indicating perhaps a primary infection of the nose; on the other hand, it may be that the nasal infection was due to extension from the meninges.

The disease is not always fatal, as many suppose; many cases of recovery are recorded even when the presence of the infection by the specific organism has been proved by lumbar puncture. Sporadic meningitis is caused by other organisms, especially by the pneumococcus or the staphylococcus, both of which are much more fatal in their results, although there is less tendency in these infections to involvement of the tissue of the brain and cord, nor is the extension along the nerves so marked.

"Lepra," vol. v., fax. 2, 1905.

Leprosy in the French Colonies.

Historique sommaire de la lèpre dans les colonies française. By A. Kermorgaut, Paris.

Kermorgaut states: Leprosy exists in most French Possessions. I have collected all the information known on the subject, and will describe the measures taken by us to guard against this plague, which grows more formidable day by day.

Colonies in America.

These are: French Guiana, Martinique, Guadeloupe, and the St. Pierre et Miquelon Islands.

Guiana.—Leprosy is supposed to have been introduced at the end of the seventeenth century by the importation of negro slaves. It is mentioned in official documents dated 1777. In 1859 Dr. Laure writes that the disease was spreading with such rapidity that one-tenth of the population was infected. The number of lepers in Guiana were estimated in 1889 to be about 300, of which 150 were in Cayenne and its neighbour-

hood; only forty-nine were isolated. The natives do not take any precautions, mixing freely with those affected.

There are two leprosy establishments—Acarouany and Saint Louis. The latest official decree was issued in 1891, ordering the isolation of all persons affected, but it is not put in force.

The treatment used is chaulmoogra oil, by injection and by the mouth.

Martinique and Guadeloupe.—First observed at the time of the immigration of negro slaves. A law was passed in 1718 to prevent the sale of infected slaves. There is a hospital at La Désirade for lepers. The number admitted in 1899 was 121. Isolation is not compulsory. Very few children are born in the establishment: from 1859 to 1899, ten. Every precaution is taken to prevent their infection, and they are separated from their mothers and sent to their relations when six months old. Dr. Noël finds chaulmoogra oil or pills of gynocardic acid and sulphate of strychnine, with frictions of europhen, 5 per cent. in chaulmoogra oil (most efficacious in the general pains in commencing leprosy), the only useful drugs.

Colonies in West Africa.

Leprosy has been observed in all our colonies from the earliest date of their establishment. Originating in Arabia and Egypt, it has gradually spread all over the continent.

Senegal.—In 1882 Borius records that leprosy is very common, and Bérenger-Féraud observed leprosy and ainhum.

The natives recognise two forms—macular and tubercular, and know that it is contagious. The tribes under the influence of fetichism make their lepers live apart. On the contrary, the followers of Islam, with its broad precepts of charity and brotherhood, do not look upon a leper as impure or contagious, and mix freely with them. This is of serious import, owing to the steady increase of the Mussulman religion amongst the inhabitants. With the suppression of the slave trade the other cause of the spread of this disease tends to disappear. The Administration has not so far taken any official steps to prevent its increase.

French Soudan.—Leprosy is observed to be gradually increasing.

Guinea.—Leprosy is fairly frequent (Dr. Evon), and is not considered contagious by the natives, who live in common with the infected.

Ivory Coast.—Leprosy exists in many parts of this colony, where the lepers are isolated by their families. Those affected avoid white people as much as possible. There is constant intercourse with the natives of the adjacent English colony, the Gold Coast, where there are two leper hospitals and many dispensaries established for gratuitous medical treatment.

Dahomey.—Several cases have been observed by Dr. Sanzeau.

French Congo.—Leprosy has been reported by several observers, and ainhum is also common. Leprosy exists in the Congo Free State.

Colonies in East Africa.

Madagascar.—Leprosy has undoubtedly been known for a long period, as there were at one time stringent laws for the isolation and detection of persons suffering from leprosy. Later on these laws fell into abeyance. General Gallieni, alarmed at the increase of the disease, established several leper hospitals: (1) Ambohidratrimo, with 700 patients, in 1902; the infants born are at once separated from their mothers. (2) Mankavaly, with 295 patients, in 1903. Average number in 1902 was 205. (3) Miarinarivo, with 165 inmates. (4) Antsirabe, 651, in 1902, under the Norwegian Mission. (5) Ambositra, just built in a province with 800 to 1,000 lepers. (6) Fianarantsoa, with four hospitals: the Government hospital, with 199 inmates, in 1902; the London Missionary Society's, with 35; the Norwegians', with 20; and the Jesuit Fathers', with 50-60. The statistics return the number of 600 lepers in this province, of which 260 were isolated in 1902. The Jesuits have commenced to build a new hospital to contain 200 patients. (7) Farafangana, built by the Lazarists Fathers in 1902, with more than 300 lepers. Other hospitals are being built. No attempt is made either by the Missions or the Government to isolate the infected properly. In 1902 the isolated lepers had risen to 2,540. In these provinces there are a little more than three lepers per 1,000 inhabitants.

Comoro Archipelago.—It is presumed that leprosy has existed here for a long time, owing to the constant intercourse with Arabia, Persia and India. The inhabitants recognise its contagiousness, and isolate the victims of this disease. There is a leper hospital at M'Zambourou containing sixty-four patients. *Mohéli.*—Leprosy exists in this island in all its forms, and is extending, as there is no isolation of the sufferers, who travel about wherever they choose. There is a place chosen for isolation, but they do not remain there. *Anjouan.*—The inhabitants drive away all lepers, who live by themselves at Chicoundouni and at La Selle. *Great Comoro.*—In this island, with a population of 53,000, there are only twenty lepers.

Colonies in the Indian Ocean.

Reunion.—A leper hospital was founded in 1852 at Saint Denis by an order decreeing strict isolation of all cases. This order is not now enforced. In 1902 the leper establishment at La Montagne sheltered sixty-one persons. The treatment consists in good food, tonics, bicarbonate of soda, baths, and chaulmoogra oil by the mouth or pills of gynocardate of magnesia. Icthyol also has given good results, and soda salicylate is given in the febrile paroxysms. Hypodermics of cacodylate of soda rapidly improve the general condition, abolish anæmia, increase weight, and cause ulcerations and tubercles to cicatrise and disappear. The sores are cleansed with potash permanganate and dressed with aristol or orthoform ointments. An ointment of icthyol 50, lard 70, olive oil 30, is much used, and a lotion of gurgun balsam and lime water for ulcers.

India.

Pondichery.—There is one hospital dating from 1849 with 44 inmates in 1903. The lepers are not strictly isolated, and the pilgrims to the Chapel of St. Lazare insist on associating with them. The disease is on the increase, and the returns give 300 lepers, or 1·72 per 1,000 approximately, and at Chandernagore, in 1899, 1 in 3,700. In 1898 there were 584 lepers in our

establishments. As the natives conceal their infected relations, there are probably about 778 diseased.

Indo-China.

Cochin China.—Formerly the natives isolated those affected with leprosy, but at present, although they consider the disease to be contagious and hereditary, they allow them to live amongst them. They amount to 4,000 or 5,000 and mix freely with the people. In 1903 a leper hospital was constructed on the island Culaorong with 600 beds,

Cambodia.—Leprosy is common in all the provinces, and is increasing. Although the natives recognise its contagiousness and that it is hereditary, the lepers live with their families until they are unable to work. They are then made to live apart or become beggars and live around the monasteries.

Laos.—This is the only disease that the natives fear, and they rigorously isolate the infected. It does not seem to increase on this account, and will disappear completely.

"Gazetta Medica di Roma."

Malarial Infection.

Guido Bacelli, from observations made in Italy, arranges malarial infections according to their periodicity into: (*a*) Quotidian, the chill appearing before noon; (*b*) tertian, appearing about noon; (*c*) quartan, appearing after noon. Pernicious malaria, according to Baccelli, presents itself as one or other of two chief groups: (*A*) A pernicious group due to conditions present in the individual. Under this heading seven main types are indicated: (1) Dysenteric; (2) bilious; (3) cardialgic; (4) diaphoretic; (5) syncopal; (6) algide; (7) comatose. In addition there is the hæmoglobinuric and hæmaturic types of less frequent occurrence but highly fatal. (*B*) A severe type of fever, which Baccelli terms subcontinuous, but in which the paroxysms appear so close together that the course of the fever is almost continuous, the symptoms following a catarrhal, rheumatic, bilious or typhoid type, or a mixture of all these types. The symptoms are due to toxins manufactured by the parasites during the process of sporulation.

Plague.

Prevalence of the Disease.

India.—During the weeks ending April 22nd, 29th, and May 6th, the deaths from plague in India amounted to 54,602, 56,732 and 52,253 respectively. The Punjab and the United Provinces are the most severely afflicted districts; in the former the figures were 27,372, 28,728 and 30,909, and in the United Provinces 16,737, 15,710 and 12,909 respectively.

South Africa.—During the weeks ending April 22nd, 29th, and May 6th, the plague report was as follows: *King William's Town*, fresh cases 2, 3 and 2; deaths 1, 0 and 2. *East London*, fresh cases 6, 2, and 1; deaths 5, 3 and 0. *Port Elizabeth*, 1 fresh case during the last week. *Port Beaufort*, 2 fresh cases and 1 death during the last week.

Hong Kong.—During the weeks ending May 13th and 20th, fresh cases 17 and 20; deaths 12 and 18 respectively.

Queensland.—No cases of plague from April 9th to April 20th. No cases in hospital on April 20th.

Deaths from Plague in India during Recent Years.

Year.	Deaths from Plague.
1901	273,679.
1902	577,427.
1903	851,263.
1904	1,022,299.

From January 1st to May 6th, 1905, no less than 739,353 persons died of plague, indicating a mortality return for 1905, unless an unexpected decline takes place, of nearly 2,000,000 deaths from plague.

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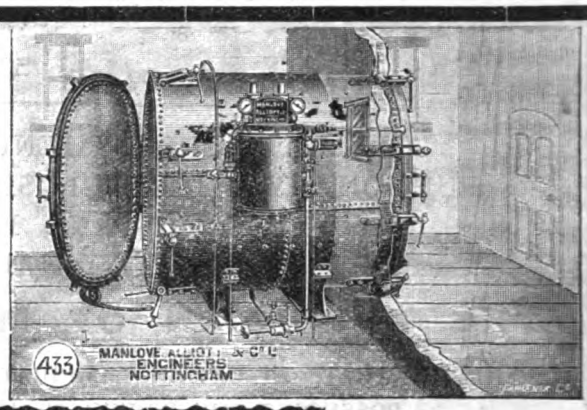
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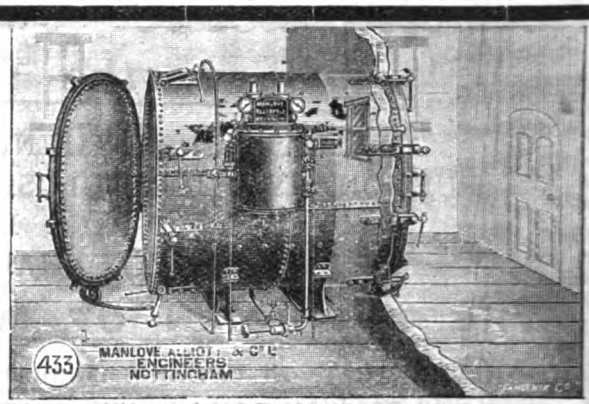
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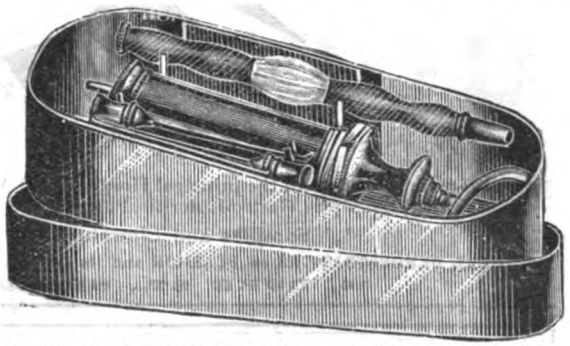
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PLAGUE IN THE BRITISH EAST AFRICAN PROTECTORATE.

(Forwarded for publication by the courtesy of the Under-Secretary of State for the Colonies.)

REPORT No. I.

By J. A. HARAN, M.A., M.B., B.Ch.(Dublin).

Kisumu, February 14, 1905.

EVER since my arrival here, I have introduced and rigidly enforced the system within the municipal area whereby no body could be buried without previous medical inspection. The report of the death of an elderly Swahili, on the evening of December 28th, 1904, drew attention to the quarter inhabited by the Swahili hut-tax collectors and their followers. It would appear that this man came from Baringo, *via* Londiani, on the previous Sunday, had sickened within twenty-four hours of arrival, and died on the above date. No buboes were demonstrable and permission was given for burial, the householder being warned to bring future cases of illness occuring within his compound to the hospital for treatment.

On the evening of December 30th, 1904, two more deaths were reported from the same house, both being Wasoga who had resided two months in Port Florence. A bubo having been demonstrated on one of the bodies, enquiry was at once instituted, and the presence of four dead rats in the house caused orders to be issued for its destruction by fire and the segregation of all the other inhabitants. This was immediately done, the people being placed under guard.

On December 31st, 1904, a thorough inspection of the Indian Bazaar, some 300 yards distant from the infected quarter, was made, and the inhabitants ordered to thoroughly cleanse their houses. This was complied with, although, thanks to constant effort, the bazaar was in a very fair condition indeed. Search for rats proved futile.

On January 1st, 1905, all the hut-tax quarter was burnt (sixteen huts), with the exception of three dwellings remote from the seat of the outbreak which were reserved for the accommodation of the segregated. Daily inspection of these people took place, and on the 7th they were removed to fresh quarters and the huts (three) burnt, together with ten others. Constant and rigorous inspection of the Indian Bazaar was meantime maintained and the segregated from the hut-tax quarter made the object of particular attention.

On January 9th, 1905, the first case (Allahbai) appeared in the Indian Bazaar. He was at once sent to hospital and the other occupants of the house placed in a camp separate from that occupied by those previously segregated. The disease then appeared in a house opposite, and subsequently broke out in the lower part of the street on the side on which it first appeared. The procedure adopted was the same in all cases, viz., isolation of the sick, segregation of all the contacts, and closing of the infected house as a preliminary to disinfection.

CLEANSING AND DISINFECTION.

Systematic cleansing and disinfection were begun early. Each house in turn was emptied of its contents, the floors moistened with disinfectants and then swept up and the refuse burnt. Air and light were admitted freely by the removal of sheets of iron, and the sides and floors of the main building and outhouses limewashed. The goods remained exposed to the sun all day and all unclean articles burnt. The bazaar was so treated throughout. At the commencement of the undertaking living rats were alone met with, but as the cleaners progressed down the street dead rodents were happened on, particularly in the infected houses. These latter possessed uncemented floors and were, for the most part, overcrowded with merchandise, the plots being obviously too small for their purpose. Had larger areas been assigned, shops and dwellings could have been separate and arrangements for storage been made.

The disinfection of the bazaar having been completed, a lull ensued. On January 26th, however, a fresh case appeared in a house situated at the end of the infected row, which was rented by Mr. Hakin. This house was well ventilated and lit and had been entirely limewashed. An isolated case then appeared on the *Winifred*, the victim being the only Pathan and the dirtiest man on board. These were followed rapidly by four other cases from the bazaar, the last living in the side street to the north-east. Evacuation of the bazaar ensued and the deserted houses are now surrounded by a guard, the inhabitants having gone under canvas to a clean spot on the most elevated part of the hill.

THE TYPE OF THE DISEASE.

The type of the disease has been in most cases bubonic, two cases alone being of the septicæmic type. Invasion was marked by a rise of temperature, severe headache, staggering, thickened speech, rapid pulse, hurried breathing, epistaxis. Tender or enlarged glands either simultaneously appeared or very quickly followed. Rapidly ensuing delirium occurred, the tongue becoming dry and brown with the advent of typhoid symptoms. Hæmorrhages were frequent, with involuntary evacuation of bladder and rectum. Death usually took place within twenty-four hours of the onset. I have already forwarded a list of patients.

HOW TO DEAL WITH AN OUTBREAK.

With regard to the future, I would humbly advise that compensation be granted and a new bazaar be erected by Government, the houses of which shall be let out at an annual rent. The place, according to Wakavirondo, has been already visited by plague at a time prior to the arrival of the European, on which account the hill had been deserted. It would be therefore wiser to retain absolute control of all dwellings erected in such an area. Houses should be well lit and ventilated and built on stone or iron piles, dwelling house, store, kitchen and shop being all separate.

The return to the bazaar of its occupants after twelve days' freedom from plague is most inadvisable, as the disease will not have ceased among the rats until some months have elapsed. Indeed, these

animals control the situation at present. Satisfactory disinfection and cleansing of houses will necessarily involve excavation of the supporting earthen plinth (which is merely faced with stone set in mud), to the threatened collapse of the house. This will involve great expenditure of time and money, and may not be satisfactory, as reports note annual recurrence of plague in the same houses despite elaborate measures.

Kisumu is merely part of the epidemic plague area which borders the lake. Koch identified the bacillus in 1898, since when outbreaks have been noted in Buddu, Bukoba, Muanza, Shirati and (last May's case) Kisumu. This unhappy termination of the Uganda Railway renders all precautions at railhead most necessary, for while outbreaks at isolated stations may be regarded without fear, the presence of many centres of a more or less insanitary character along the line makes an outbreak of plague the cause of the greatest apprehension. With a Government-owned bazaar, let out to tenants at an annual rent, all insanitary conduct can be visited without delay, if necessary, by the expulsion of the offender. Another advantage will be that the new bazaar site will be more remote from the railway terminus and will not embarrass traffic should trouble occur in the future.

The Part Played by Rats.

The movements of the rats during the present outbreak are of interest. At the period of the first case enquiry revealed that the animals had practically disappeared, abandoning houses and stores and leaving but a few behind. With the increase of cases dead rats were happened on, especially among bags of grain and coils of wire and rope. They are now noted as showing a slight tendency to return, though dead rats have been found in bazaar houses even after thorough cleansing. They are evidently dying in the plinths and come forth at the last moment. The limit of a plague area may possibly be coterminous with the boundary within which the particular infected tribe or host of rats is limited, such having no communication with neighbouring tribes.

I may mention that the railway authorities have thoroughly cleaned and ventilated all native quarters, to the advantage of the building concerned.

It may not be without interest to note that the late Sub-Commissioner at Usoga, Mr. W. Grant, C.M.G., informed us that four of Lubwa's wives died of plague one afternoon within half an hour. He states the disease has been well known for years in Usoga and Kavirondo.

Plague Report No. II.

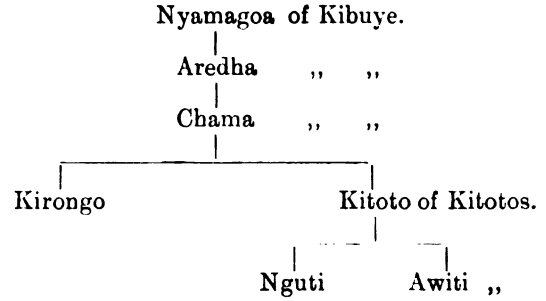
Kisumu an Endemic Area.

By D. Milne, M.B., C.M.(Aberd.).

February 14, 1905.

Enquiries as to the previous existence of plague at Kisumu revealed the fact of a common knowledge amongst the natives of a fatal malady that had attacked the dwellers on the present Government site long before the advent of the white man.

An intelligent Kavirondo, named Ngutu, half brother to the local chief, gave the following information regarding it, prefacing his replies by stating that he had learnt all he knew of it from his father and mother and the talk of the old folk in the village. As his genealogy is mixed up in his account, for the sake of clearness it is given below. These forefathers had been in occupation of Kibuye Hill, the local name of the ridge on which Kisumu is built.



In the time of Nyamagoa and his son Aredha, an epidemic broke out in the village on Kibuye Hill, characterised by pain and swelling in the groins and fever, the swelling sometimes very large. The disease was very fatal, many men, women, and children dying rapidly from it, including the chief and his son. This disease they called "Tuo." Chama, grandson of Nyamagoa, being sick of the disease, deserted the hill for the plains, going towards Kibos with his people. There he died, and his son, Kitoto, moved some ten miles further away and founded the present village bearing his name. Kitoto was apparently aged about fifteen years old at the time, and died two years ago an old man; from a passing recollection of him, putting his age at sixty-five to seventy years, would date the finish of the epidemic at about fifty years ago. Since that time there has been no other outbreak till the present one.

Hearing that Nguti's uncle, Kirongo, one of the village elders, was still alive, he was produced and interrogated.

His account, collated for coherent narration, was as follows:—

The Kisumu Kavirondo were of the Ja-lŭŏ tribe, and came from the Acholi country (bordering the Nile between Nimule and Wadelai). His forefathers had settled on the Usĕmi hills (fourteen miles across the bay on the shores of the lake from Port Florence as the crow flies). There they were attacked by this disease, tuo, as a result of which they left the hills and came down and settled on the plains, where the disease, again breaking out amongst them, drove them to shift so that they came on the Kibuye ridge. Three months after they had built their huts it broke out once more with renewed violence. They stood its ravages for two years, when once more they evacuated to Kitotos, where they had resided in safety ever since. At the time of this last hegira, he was an infant at his mother's breast; all he related he had heard spoken by his father and mother.

Both narrators stated that the disease was confined to the lake shores; they had never heard of it on the Nandi hills. As to the origin of its coming, the native idea was that it was the work of Shaitan, and came from eating cattle which had died through being infected by eating the bad grass on the hill, or

it came from dead fish. Often on the surface of the lake fishermen found dead fish floating; these brought home, cooked and eaten, produced the disease. There was no cure for it; all they could do was to move from one spot to another.

Several other Kavirondos in the town — police sergeant and headmen—were interrogated, and all gave substantially the same account as above.

We may, therefore, accept as authentic the existence of a previous outbreak in the Kisumu district of a rapidly fatal spreading epidemic, lasting over several years, attended with fever and bubonic symptoms; in other words, of bubonic plague. Taking this fact in consideration with the information already collected regarding other parts of the lake shores, we may conclude that the railway terminus and port *is* situated in an endemic home of plague.

(1) Dr. Christy, in an article, "Kaampuli" (Bubonic Plague) in Equatorial East Africa, published in the *British Medical Journal* in the end of 1903, states that he found a definite history of Kaampuli (Luganda for "Plague") in various districts from Entebbe to German East Africa round the west side of the Nyanza.

(2) Koch's report on Plague in German East Africa, an abstract of which is published in Dr. Christy's paper.

(3) In the last two years definite cases of plague have been reported by competent observers at Muanza and hinterland, Bukoba and Sherati, and German East Africa.

NOTE.—The translation of the Kavirondos' stories was conducted by H.M. Sub-Commissioner, Kisumu.

PLAGUE IN SIAM.

By H. CAMPBELL HIGHET, M.D., D.P.H.

Chief Medical Officer Sanitary Department, Siam.

For the first time, so far as is known, the capital of Siam has been visited by a slight outbreak of bubonic plague.

On December 20th, 1904, information was brought to the Health Department of Bangkok that several suspicious deaths had taken place on the west bank of the river. The Medical Officer of Health at once proceeded to investigate the matter, when it was found that four deaths had occurred, that the symptoms had been very high fever, with sudden onset and death within thirty-six hours at the latest. No buboes or other swellings had been noticed, but in a house adjacent to that in which three persons had died an old man was discovered who on examination proved to be suffering from typical bubonic plague.

All these cases were limited to a settlement of British Indians, but, on further enquiry, the Health Officer learned that another death from high fever, with buboes, had occurred in the house of a Siamese nobleman just outside the Indian settlement. There was also a history of great mortality amongst the rats for a week or two previous to the outbreak, followed apparently by migration of any surviving rats to other localities.

A cordon of police was at once drawn round the infected area, one lot of dirty wooden houses was pulled down and burned, others were vacated, the people being housed in temporary mat sheds within the cordon; a gang of rat-catchers was set to work, and thorough cleansing and disinfection of the district was carried out. Some days were spent in burning the rubbish, filth, and general odds and ends which one always finds in such settlements of the East. Wherever a death occurred, the houses were practically gutted out, the contents burned, and compensation was at once given for the loss incurred. The corpses were at once cremated and the houses disinfected.

A reward was offered to all persons bringing rats dead or alive to a police station, with the result that within a period of two months over one hundred and fifty thousand rats have been destroyed.

A temporary isolation hospital was established to which the sick were removed. Eleven deaths in all took place within the cordon. Previous to the quarantine being imposed a woman who had attended one of the fatal cases had fled in terror to the east bank of the river. There she sickened and died—the case only coming to the notice of the authorities after her death. All persons who had been in contact with this woman were removed to the isolation hospital and the house disinfected.

Ten days after the last case the cordon was removed, but the following day another very sudden death from plague took place in the infected district. A young Siamese male, aged twenty-one years, developed fever at six p.m., suffered from severe diarrhœa throughout the night, and died at seven in the morning—a bubo meanwhile having arisen in his left groin. This was the last case that has been discovered within the Indian settlement. The cordon was not renewed and no further case of plague was detected until a period of twenty-one days had elapsed, when, on January 22nd, it broke out in a fresh district adjacent to the Indian settlement. From this date till February 11th seventeen fresh cases were discovered. All arose in districts close to the Indian settlement and were preceded by mortality amongst rats.

A few remarks may be made with regard to the outbreak.

SOURCE OF ORIGIN.

It was impossible to trace how the infection entered Bangkok. Nothing definite could be discovered to throw any light on the question.

NATURE OF THE CASES.

The first cases were extremely acute, partaking of the nature of an acute septicæmia, death occurring within twenty-four to thirty-six hours without there being time for buboes to be noticed. Later cases proved more typical of the ordinary so-called bubonic plague. We had one very rapid case, already referred to, in which severe diarrhœa was the principal feature. Buboes were noted in the inguinal, femoral, iliac, submaxillary, occipital and axillary regions. Had we not known that the first cases were plague, the cases with swollen submaxillary glands might have escaped detection, as there was at the same time in Bangkok a widespread epidemic of true mumps.

Towards the end of the outbreak only were recoveries obtained. One pneumonic case was noted.

DEATH-RATE.

Of a total of twenty-nine cases, twenty-three died, giving a death-rate of 79 per cent., which agrees with epidemics in other places in the East.

Bacteriological Examination.

All cases were not verified by bacteriological examination, but from time to time smears were made from glands excised *post mortem*, and in all plague bacilli were discovered in abundance.

Administrative Difficulties.

So far as the Siamese Government was concerned everything went perfectly smoothly. His Majesty the King, recognising that prompt measures were necessary, gave full power to the Medical Officer of Health, placed the whole police force at his disposal, and gave *carte blanche* with regard to expense.

The usual scare arose, however. Wild rumours arose all over the town that the Health Department was kidnapping women and children, taking them to the plague hospital, there putting ice on their chests until death supervened, when the bodies were opened, and the gall-bladders removed for the purpose of preparing fresh poison wherewith to kill fresh victims. The life of the M.O.H. and his assistants were so persistently threatened that police guards had to be provided. A royal proclamation explaining the nature of the disease and the steps that were being taken to stamp it out was published with excellent result. This, with the prosecution of a woman who was discovered spreading false reports, allayed all excitement in a couple of weeks.

AN ENQUIRY INTO THE ETIOLOGY AND PATHOLOGY OF BERI-BERI.

By Hamilton Wright, M.D.(McGill).

Director of the Department for Medical Research, Federated Malay States.

Abstract No. II.

Described as Observation No. I.

(From vol. ii., No. 1, "Studies from Institute for Medical Research, Federated Malay States." Printed by authority of the Resident-General, F.M.S. Singapore: Kelly and Walsh, May, 1902.)

The New Gaol in Kwala Lumpor presents quite unique possibilities for an enquiry into the etiology of beri-beri, for the disease has been endemic and frequently epidemic since eight months after the Gaol was opened in January, 1895. The daily average of prisoners is between four and five hundred, the yearly record of beri-beri is rarely less than one hundred.

Up to May 3rd, 1901, many of the prisoners were employed at extra-mural road-making and other work, and it was impossible to say whether they contracted beri-beri as the result of some extra-mural agent or an agent intrinsic to the Gaol itself.

I determined to have all the prisoners confined to the gaol, to place the different nationalities on as uniform a diet as was consistent with their habits and under as nearly as possible uniform conditions in regard to work, personal hygiene and daily routine.

I proposed to determine—

(1) If the disease was contracted intra-murally, or extra-murally by prisoners engaged on work beyond the gaol walls.

(2) The value of certain diets as etiological factors.

(3) Whether or not a racial immunity existed.

Dr. E. A. O. Travers, State Surgeon of Selangor, before my arrival in the Peninsula, had made very important observations concerning the prevalence of beri-beri in the Old and New Gaols of Kwala Lumpor. These I quote at length.

The Old Gaol.

Dr. Travers reports: Up to January, 1895, all prisoners in the State of Selangor were kept in the Old Kwala Lumpor Gaol. This was situated on a small hill about 180 feet above the sea level and was surrounded by open grassy land. The buildings consisted of two large blocks of separate cells, made partly of wood and partly of brick, the outside walls being of brick. The floors of all cells, with the exception of those on the ground level, were of wood.

The New Gaol.

This is situated about 1½ miles from Kwala Lumpor on an open grassy hill about 160 feet above sea-level. The grassy hill slopes rapidly away to low-lying swampy land used by Chinese as vegetable gardens.

The piece of ground enclosed by the gaol wall was for many years used as a burial ground for Chinese, and over half its extent was studded with graves, some of them being very old and others of comparatively recent date. Altogether some 400 coffins and remains, in varying stages of decay, were taken out of the ground when the gaol wall was built.

The Chinese buried on the gaol site had been for the most part employed in the very extensive tin mines in the neighbourhood. It is not probable that many of them died from beri-beri. I can discover no history of any epidemic in the neighbourhood, and am told by those who know that there were very few cases of beri-beri in the mines when the cemetery was in use.

Prison Diets.

From a study of the Prison food it is evident that the diets were well balanced and generous except in the case of short sentence prisoners. As it is not usual for the latter grade of prisoners to oftener contract beri-beri than long sentence prisoners, it does not appear that punishment diet can be regarded as a factor in producing the disease.

Medical History of Prisoners in Old and New Gaols.

Up to the year 1894 all prisoners were kept in the Old Kwala Lumpor Gaol.

On January 1st, 1895, all prisoners were removed to the New Gaol and the Old Gaol was temporarily abandoned, with the exception of the Infirmary, to which all patients were sent until March 20th following.

So long as they were confined to the Old Gaol the health of the prisoners left nothing to be desired.

No cases of beri-beri originated in the Old Gaol, and those prisoners who were admitted to it suffering from the disease rapidly recovered. No death from beri-beri occurred while prisoners were living in the Old Gaol.

During the years 1893 and 1894 an average of 117 prisoners was employed at the New Gaol site. They were occupied chiefly at masonry work, stonebreaking, and later in levelling. They slept in temporary wooden association wards on the site of the present building. The prisoners employed on this work were as healthy as those working at the Old Gaol.

At the time of the removal of the prisoners to the New Gaol on January 1st, 1895, the New Gaol buildings were not completed, and the majority of the

prisoners were, therefore, employed in assisting the masons.

Dysentery and Cholera.

During the first quarter of the year 1895 the general health of the prisoners was not good, a large number of cases of dysentery and diarrhœa occurred, and the case mortality rose to 6·9 per cent. The case mortality for the second quarter was 7 per cent.

On August 10th cholera broke out, and during the following ten days 126 cases occurred, causing 68 deaths. This outbreak was distinctly traceable to the water supply. No cases occurred after the introduction of an entirely fresh supply of water from a hill reservoir about eight miles away. I regard it as more than a coincidence that an outbreak of acute beri-beri followed shortly on this outbreak of cholera. I have given evidence that fatal acute cases of beri-beri present a lesion of the stomach and small gut that points conclusively to the contents of those parts of the area in which occurs the multiplication of the specific organism and the elaboration of its toxin. It is altogether likely that the water supply to which was traced the cholera outbreak was also in part the original source of the beri-beri infection. All the facts that I have been able to observe tend to confirm a view that the specific organism of beri-beri is of low resisting power and that it is quickly destroyed in the presence of sunlight and oxygen. It would, therefore, not remain as a contamination of water for a long period. In this connection it should be recalled that the severe outbreak of beri-beri that occurred in Manila, 1882-83, followed hotly on the track of a severe outbreak of cholera (*see* Königer, "Beri-beri in Manila," *Deutsch. Arch. f. Klin. Med.*, xxxiv., 1884). That the outbreak of beri-beri did not cease when the new water supply was turned on to the New Gaol is to be accounted for by the fact that the cells of the prisoners had in the meantime become infected.

During the first half of the year 1895 seventeen prisoners were admitted to the New Gaol suffering from acute beri-beri, but no cases originated in the Prison itself.

Outbreak of Beri-beri in New Gaol.

The first case of beri-beri reported as having been actually contracted in the New Gaol occurred on August 3rd, 1895. Another was reported on the 7th and two others on the 26th and 28th of the month. In September 32 cases occurred. All these cases were treated at the New Gaol Infirmary and proved of a most fatal type, causing thirteen deaths during the month.

The case mortality from beri-beri during the month of September, 1895, was 31·7 per cent., as against 9·09 per cent at the District Hospital, Kwala Lumpor, where 354 cases of this disease were treated, with 32 deaths. It should be noted that the mortality at the Gaol was the mortality of an acute outbreak, while the mortality at the District Hospital was largely the mortality of residual beri-beri paralysis.

Effect of Transformation to Old Gaol.

Arrangements were then made to transfer all convicts suffering from beri-beri to the infirmary at the Old Gaol. The beneficial results of this were at once apparent.

On October 21st, 1895, sixty apparently healthy prisoners were sent back to the Old Gaol, and a gang of from 90 to 125 were kept there till July, 1896.

The prisoners sent to the Old Gaol were not specially selected, except that no convict showing symptoms of beri-beri at the time was transferred. These prisoners kept in good health, and no fresh cases of beri-beri occurred among them during the time that they were at the Old Gaol. The average number of prisoners at the New Gaol during the same period was 289; 345 cases of beri-beri were admitted to the Infirmary from amongst them.

The Part Played by Water Supply.

Advantage was taken of the opportunity presented for the residence of a large number of prisoners at the Old Gaol to test the possible influence of water supply on the outbreak of beri-beri. The pipe water supply was cut off the New Gaol and turned on to the Old Gaol, on April 1st, 1896, the prisoners at the New Gaol being supplied with water from wells. This arrangement was continued until July 7th, 1896, during which time no cases of beri-beri originated in the Old Gaol, but 117 cases were admitted into the infirmary at the New Gaol.

Food.

The prisoners suffering from beri-beri, who were transferred from the New Gaol Infirmary for treatment at the Old Gaol on October 1st, 1895, and the healthy prisoners who were transfered on October 25th, 1895, to the same building, were fed on exactly similar rations as those remaining in the New Gaol. The food was cooked and prepared in the New Gaol together with that for the other prisoners, and was carried twice daily to Old Gaol in a hand cart. This arrangement was continued until December 14th, when raw rations (with the exception of rice, which was sent direct to the Old Gaol by the contractor) were sent daily from the New to the Old Gaol, and were cooked in the latter building.

The rapid improvement in the condition of the sick prisoners after their transfer to the Old Gaol, and the excellent health enjoyed by the prisoners transferred from the New Gaol for a period of nine months during which the convicts remaining at the New Gaol were severely attacked with beri-beri, is remarkable as showing that, in at any rate this epidemic, food and water supply had no bearing whatever on the causation or progress of the disease.

To positively eliminate all the dubious points I determined to confine all the prisoners to the main part of the Gaol, except a small party, and put them under as uniform conditions as possible with regard to diet, personal hygiene, work and sleep.

Influence of Season.

It appears to be true that the great majority of cases of beri-beri occur in the Malay Peninsula during the north-east monsoon, *i.e.*, during the months from September to April. It is certainly true of beri-beri in the Kwala Lumpor Gaol. The original outbreak began in August, 1895, and in the following years the

Bacteriological Examination.

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Administrative Difficulties.

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Director of the Department for Medical Research, Federated Malay States.

Abstract No. II.

Described as Observation No. I.

(From vol. ii., No. 1, "Studies from Institute for Medical Research, Federated Malay States." Printed by authority of the Resident-General, F.M.S. Singapore: Kelly and Walsh, May, 1902.)

The New Gaol in Kwala Lumpor presents quite unique possibilities for an enquiry into the etiology of beri-beri, for the disease has been endemic and frequently epidemic since eight months after the Gaol was opened in January, 1895. The daily average of prisoners is between four and five hundred, the yearly record of beri-beri is rarely less than one hundred.

Up to May 3rd, 1901, many of the prisoners were employed at extra-mural road-making and other work, and it was impossible to say whether they contracted beri-beri as the result of some extra-mural agent or an agent intrinsic to the Gaol itself.

I determined to have all the prisoners confined to the gaol, to place the different nationalities on as uniform a diet as was consistent with their habits and under as nearly as possible uniform conditions in regard to work, personal hygiene and daily routine.

I proposed to determine—

(1) If the disease was contracted intra-murally, or extra-murally by prisoners engaged on work beyond the gaol walls.

(2) The value of certain diets as etiological factors.

(3) Whether or not a racial immunity existed.

Dr. E. A. O. Travers, State Surgeon of Selangor, before my arrival in the Peninsula, had made very important observations concerning the prevalence of beri-beri in the Old and New Gaols of Kwala Lumpor. These I quote at length.

The Old Gaol.

Dr. Travers reports: Up to January, 1895, all prisoners in the State of Selangor were kept in the Old Kwala Lumpor Gaol. This was situated on a small hill about 180 feet above the sea level and was surrounded by open grassy land. The buildings consisted of two large blocks of separate cells, made partly of wood and partly of brick, the outside walls being of brick. The floors of all cells, with the exception of those on the ground level, were of wood.

The New Gaol.

This is situated about 1½ miles from Kwala Lumpor on an open grassy hill about 160 feet above sea-level. The grassy hill slopes rapidly away to low-lying swampy land used by Chinese as vegetable gardens.

The piece of ground enclosed by the gaol wall was for many years used as a burial ground for Chinese, and over half its extent was studded with graves, some of them being very old and others of comparatively recent date. Altogether some 400 coffins and remains, in varying stages of decay, were taken out of the ground when the gaol wall was built.

The Chinese buried on the gaol site had been for the most part employed in the very extensive tin mines in the neighbourhood. It is not probable that many of them died from beri-beri. I can discover no history of any epidemic in the neighbourhood, and am told by those who know that there were very few cases of beri-beri in the mines when the cemetery was in use.

Prison Diets.

From a study of the Prison food it is evident that the diets were well balanced and generous except in the case of short sentence prisoners. As it is not usual for the latter grade of prisoners to oftener contract beri-beri than long sentence prisoners, it does not appear that punishment diet can be regarded as a factor in producing the disease.

Medical History of Prisoners in Old and New Gaols.

Up to the year 1894 all prisoners were kept in the Old Kwala Lumpor Gaol.

On January 1st, 1895, all prisoners were removed to the New Gaol and the Old Gaol was temporarily abandoned, with the exception of the Infirmary, to which all patients were sent until March 20th following.

So long as they were confined to the Old Gaol the health of the prisoners left nothing to be desired.

No cases of beri-beri originated in the Old Gaol, and those prisoners who were admitted to it suffering from the disease rapidly recovered. No death from beri-beri occurred while prisoners were living in the Old Gaol.

During the years 1893 and 1894 an average of 117 prisoners was employed at the New Gaol site. They were occupied chiefly at masonry work, stonebreaking, and later in levelling. They slept in temporary wooden association wards on the site of the present building. The prisoners employed on this work were as healthy as those working at the Old Gaol.

At the time of the removal of the prisoners to the New Gaol on January 1st, 1895, the New Gaol buildings were not completed, and the majority of the

prisoners were, therefore, employed in assisting the masons.

Dysentery and Cholera.

During the first quarter of the year 1895 the general health of the prisoners was not good, a large number of cases of dysentery and diarrhœa occurred, and the case mortality rose to 6·9 per cent. The case mortality for the second quarter was 7 per cent.

On August 10th cholera broke out, and during the following ten days 126 cases occurred, causing 68 deaths. This outbreak was distinctly traceable to the water supply. No cases occurred after the introduction of an entirely fresh supply of water from a hill reservoir about eight miles away. I regard it as more than a coincidence that an outbreak of acute beri-beri followed shortly on this outbreak of cholera. I have given evidence that fatal acute cases of beri-beri present a lesion of the stomach and small gut that points conclusively to the contents of those parts of the area in which occurs the multiplication of the specific organism and the elaboration of its toxin. It is altogether likely that the water supply to which was traced the cholera outbreak was also in part the original source of the beri-beri infection. All the facts that I have been able to observe tend to confirm a view that the specific organism of beri-beri is of low resisting power and that it is quickly destroyed in the presence of sunlight and oxygen. It would, therefore, not remain as a contamination of water for a long period. In this connection it should be recalled that the severe outbreak of beri-beri that occurred in Manila, 1882-83, followed hotly on the track of a severe outbreak of cholera (*see* Königer, "Beri-beri in Manila," *Deutsch. Arch. f. Klin. Med.*, xxxiv., 1884). That the outbreak of beri-beri did not cease when the new water supply was turned on to the New Gaol is to be accounted for by the fact that the cells of the prisoners had in the meantime become infected.

During the first half of the year 1895 seventeen prisoners were admitted to the New Gaol suffering from acute beri-beri, but no cases originated in the Prison itself.

Outbreak of Beri-beri in New Gaol.

The first case of beri-beri reported as having been actually contracted in the New Gaol occurred on August 3rd, 1895. Another was reported on the 7th and two others on the 26th and 28th of the month. In September 32 cases occurred. All these cases were treated at the New Gaol Infirmary and proved of a most fatal type, causing thirteen deaths during the month.

The case mortality from beri-beri during the month of September, 1895, was 31·7 per cent., as against 9·09 per cent at the District Hospital, Kwala Lumpor, where 354 cases of this disease were treated, with 32 deaths. It should be noted that the mortality at the Gaol was the mortality of an acute outbreak, while the mortality at the District Hospital was largely the mortality of residual beri-beri paralysis.

Effect of Transformation to Old Gaol.

Arrangements were then made to transfer all convicts suffering from beri-beri to the infirmary at the Old Gaol. The beneficial results of this were at once apparent.

On October 21st, 1895, sixty apparently healthy prisoners were sent back to the Old Gaol, and a gang of from 90 to 125 were kept there till July, 1896.

The prisoners sent to the Old Gaol were not specially selected, except that no convict showing symptoms of beri-beri at the time was transferred. These prisoners kept in good health, and no fresh cases of beri-beri occurred among them during the time that they were at the Old Gaol. The average number of prisoners at the New Gaol during the same period was 289; 345 cases of beri-beri were admitted to the Infirmary from amongst them.

The Part Played by Water Supply.

Advantage was taken of the opportunity presented for the residence of a large number of prisoners at the Old Gaol to test the possible influence of water supply on the outbreak of beri-beri. The pipe water supply was cut off the New Gaol and turned on to the Old Gaol, on April 1st, 1896, the prisoners at the New Gaol being supplied with water from wells. This arrangement was continued until July 7th, 1896, during which time no cases of beri-beri originated in the Old Gaol, but 117 cases were admitted into the infirmary at the New Gaol.

Food.

The prisoners suffering from beri-beri, who were transferred from the New Gaol Infirmary for treatment at the Old Gaol on October 1st, 1895, and the healthy prisoners who were transfered on October 25th, 1895, to the same building, were fed on exactly similar rations as those remaining in the New Gaol. The food was cooked and prepared in the New Gaol together with that for the other prisoners, and was carried twice daily to Old Gaol in a hand cart. This arrangement was continued until December 14th, when raw rations (with the exception of rice, which was sent direct to the Old Gaol by the contractor) were sent daily from the New to the Old Gaol, and were cooked in the latter building.

The rapid improvement in the condition of the sick prisoners after their transfer to the Old Gaol, and the excellent health enjoyed by the prisoners transferred from the New Gaol for a period of nine months during which the convicts remaining at the New Gaol were severely attacked with beri-beri, is remarkable as showing that, in at any rate this epidemic, food and water supply had no bearing whatever on the causation or progress of the disease.

To positively eliminate all the dubious points I determined to confine all the prisoners to the main part of the Gaol, except a small party, and put them under as uniform conditions as possible with regard to diet, personal hygiene, work and sleep.

Influence of Season.

It appears to be true that the great majority of cases of beri-beri occur in the Malay Peninsula during the north-east monsoon, *i.e.*, during the months from September to April. It is certainly true of beri-beri in the Kwala Lumpor Gaol. The original outbreak began in August, 1895, and in the following years the

vast majority of cases originated between August and May. Original cases of beri-beri do certainly crop up in the Gaol between April and September, but the larger number of cases seen during the south-west monsoon are really cases of more or less severe beri-beric residual paralysis. For this reason it was advisable that my observation should begin with one monsoon and end with the other. I chose the beginning of the south-west monsoon blowing between April and September. It permitted the prisoners to be on a high grade diet for a first six months during which, under ordinary circumstances, few cases of beri-beri originate. Further, it prepared them efficiently, if a normal diet could do so, to withstand the onset of any other factor, meteorological or otherwise, which seems to exist in association with the contrary monsoon.

Distribution of Prisoners.

On May 3rd, 1901, I made a physical examination of all prisoners in the Kwala Lumpor Gaol, and took their history both previous to and after incarceration, to ascertain those who at the time had or had had beri-beri within five years, whether contracted within or without the Gaol. Of the whole number of prisoners 101 had had beri-beri, 18 of them still bearing signs of beri-beric residual paralysis. The 101 prisoners, to be known as Party No. 1, were placed in a separate part of the building and at separate work.

Party No. 2 was composed of 113 prisoners who did not then have, or never had had beri-beri; the party slept and worked by themselves.

A third party, to be known as Party No. 3, was composed of 33 prisoners who at the time did not have and never had had beri-beri. It was placed in separate cells to sleep. It should be stated here that no case of beri-beri is known to have originated in this block. The work of Party No. 3 was wholly extra-mural; grass cutting and water carrying at the gaolers' and warders' quarters just outside the main gateway. This party averaged about 36 during the eleven months of observation. Its strength was maintained by allotting to it prisoners from Party No. 2 who on incarceration were found to be free of signs and history of having had beri-beri. The whole party was specially watched to prevent any member of it supplementing his gaol diet. It was not possible for any prisoner in this party to get food surreptitiously.

A fourth party, to be known as Party No. 4, was composed of about 38 cooks, dhobies and tailors who had had more or less severe beri-beri in the Gaol but who had almost wholly recovered. I was, in view of their having had beri-beri, warranted in regarding them as immune. During the day they were employed in the kitchens and laundries. At night they slept apart. The party scarcely changed during the eleven months' observation, all of its members being long sentence prisoners.

Dietetic and Hygienic Conditions under which the Prisoners were placed.

After segregating the prisoners into four parties my object was to render the conditions as to clothing, sleep, water supply, personal hygiene, &c., as uniform as possible to all parties.

The prejudices of the various races in the matter of diet had to be recognised, of course.

The water supplied to all prisoners for drinking and bathing was direct from the Kwala Lumpor water supply, which is above suspicion.

The rice was a good quality of Siam or Rangoon. It was supplied to the Gaol in bags twice a week. I frequently inspected it and always found it sweet, dry and free of mould. Bacteriological examinations of rice direct from the bags was made several time during the observation. Spores of *B. subtilis* and *Aspery. niger* were common, as in Observation No. 4 I found they were common to all rices. I was never able to detect more than the spores of the above organisms. But by moistening the rice with warm sterilised water the spores of both mould and bacterium were induced to grow. The rice as supplied to the Gaol was, however, always free of mould. *The rice before being delivered to the prisoners for their mid-day and evening meals was steamed for two and a half hours under two atmospheres of pressure, while that for the morning meal was boiled from* 8 *p.m. to* 5 *a.m. to form a congee or porridge*, a treatment sufficient to exterminate all known organisms and destroy all known toxins. Several bacteriological examinations of the rice made after it had been steamed under pressure and boiled proved it be free of mould spores and the spores of *B. subtilis*. The rice as delivered to the prisoners in the Kwala Lumpor Gaol was free of all organisms or toxins and generally above criticism.

The beef, pork, mutton and eggs supplied to the Gaol were regularly inspected, and if not up to a high standard were replaced by better.

Vegetables were chiefly cucumber, yams, lettuce, potatoes, French beans, pumpkin and peas grown by Chinese gardeners. Such vegetables are in the growing stage top-dressed with human excreta.

Much of the excreta used is collected in the neighbourhood of mines and other foci of beri-beri, and it seemed possible to me shortly after arrival in the Peninsula that it might be the chief medium of infection, assuming beri-beri to be due to a germ which gained entrance to the body *via* the alimentary tract. This assumption was suggested by the condition of the stomach and duodenum in the first twenty *post mortems* on acute pernicious cases. But in June, 1900, I made an experimental observation, outlined in Observation No. 5, to determine if the germ or its toxin was present in top-dressed vegetables. It does not seem so as the result of that observation.

Top-dressed vegetables may, I think, be excluded as the carrier of the cause of beri-beri in the gaol. It would seem that assuming they did hold a toxic substance it would be removed by the washing or destroyed by the two hours' boiling they underwent before delivery to the prisoners. In connection with this point it should be noted that beri-beri is almost unknown amongst Chinese market gardeners. They generally live alone or with their families in detached shacks.

The proportion of nitrogen to carbon in the above diet averaged about 1 in 12. This is a higher proportion of nitrogen than is generally recognised as normal. To those who believe beri-beri to be due to nitrogen

starvation I will point out later that on this diet 49 original cases of beri-beri occurred in Party No. 2, and 102 had paralytic relapses in Party No. 1. Most of the cases occurred after the prisoners had been on the diet for four months.

The bad feature of the Prison routine is that after lock up at 5.30 p.m. the prisoners must defecate in pans of earth in their cells; that the excreta is not removed till next morning, and that the first meal is eaten before the hands are washed. It is obvious that this system is hygienically bad. Beyond doubt it is an active agent in the vitiation of the Gaol atmosphere, and, as I will point out later, seems to be the probable source of the Gaol infection and of the transmission of the organism of the disease from man to man. Prisoners suffering from acute beri-beri and beri-beric residual paralysis are admitted to the Gaol in large numbers; the average length of occupation of any cell is short. It is more than probable that the acute cases infect the floors and blankets by means of their excreta, and that such infection is carried into the food of others by unclean hands.

Influence of Rainfall.

It is doubtful if mere increase in the rainfall has any direct effect in the causation of beri-beri. But it is probable that in a so badly constructed place as the Gaol it affords the moisture necessary for the virile development of the specific organism.

Incubation Period.

This analysis appears to indicate that the incubation period of beri-beri may be as short as ten days. It is in keeping with information gathered over the wider field of the whole Peninsula (*see* paras. 76 to 84). Most of the cases that occurred within thirty days of incarceration developed the disease suddenly and the sensory and motor paralysis rapidly spread from the lower to the upper thoracic and lower cervical segments of the spinal cord. It is possible, of course, that several of the thirteen cases that occurred within fourteen days were infected before incarceration. Against this, however, is the fact that eight of them were Kwala Lumpor rickshaw and shop coolies, a class in which beri-beri is rarely seen.

Nationality.

Beri-beri as seen in the Goal is no respecter of nationality; the Chinese furnish the vast majority of cases both relatively and otherwise.

Results Obtained by the Eleven Months' Observation.

(1) Beri-beri is independent of diet considered as diet; (2) the Gaol itself is a focus in which the virus of beri-beri is generated; (3) beri-beri is, broadly speaking, an infectious disease.

Proof that Diet per se is not a Causative Factor of Beri-beri.

The diet of all prisoners was as physiologically correct as that provided in the Japanese Navy after 1884, and to which is ascribed the disappearance of beri-beri from its *personnel* by several Japanese authorities, Takaki more particularly. In spite of this physiologically correct diet, 49 cases originated and 123 redeveloped signs of paresis or recontracted the disease during its continuance at the Gaol, and after the regular scales of diet were reverted to there was no increase but rather a decline in the number of cases of beri-beri.

This is conclusive proof that on a diet qualitatively and quantitatively correct beri-beri is, nevertheless, contracted. It positively eliminates diet regarded as diet as a factor in the causation of the disease.

Proof that the Causative Factor of Beri-beri is Intra-mural.

It will, I think, be granted that the members of Parties Nos. 1 and 2 were isolated from extra-mural pathogenic factors, except what—

(*a*) Might be wafted in on the air;

(*b*) Be introduced in the dietetic articles;

(*c*) Be brought to bear on them by a slight mediate contact with members of Party No. 3 who worked at extra-mural work but bathed at tank No. 5, though at a different time to Party No. 2;

(*d*) By infection introduced in the clothes or systems of prisoners admitted to the Gaol during the eleven months of observation.

All these and other extra-mural factors were, I think, effectively eliminated by the precautions I took to segregate Parties Nos. 1 and 2, and the dietetic and general hygienic arrangements I placed them under.

In regard to (*a*), if beri-beri in the Gaol is due to a volatile poison or to micro-organisms suspended in the atmosphere and wafted amongst the prisoners, all the prisoners would be equally exposed and it would be only reasonable to expect that members of Party No. 3 would have contracted beri-beri in a proportion equal to the members of Parties Nos. 1 and 2. As already stated, no member of Party No. 3 contracted beri-beri. So that factor (*a*) is eliminated.

In regard to (*b*), I have intimated in paragraphs 284-292 that it was not possible for an infective or other causal agent of beri-beri to reach the prisoners in parties Nos. 1 or 2 *via* the dietetic articles The rice as delivered to the prisoners was sterile. Infected fish, supposed by some authorities to be the direct or indirect cause of beri-beri, was absolutely excluded from the diet of all prisoners. Infection that might have been brought about by the use of top-dressed vegetables is also eliminated, for experimental evidence (Obs. 5) and enquiry amongst Chinese gardeners is wholly against such a view. Further, the vegetables delivered to the prisoners were so prepared as to destroy all known organisms and toxins. Any assumption that the diet of the prisoners looked at qualitatively or quantitatively was a factor in the production of beri-beri in the Gaol is again contradicted by the entire escape of members of Party No. 3, who were on the same diet as Parties Nos. 1 and 2.

To the reasonable mind it must be obvious that neither the diet itself was a causal factor of beri-beri or was a vehicle through which the causal factor of beri-beri was introduced from without into the Gaol. This view, however, does not exclude the possibility that the prisoners who contracted beri-beri may have done so by infecting their food after it was delivered to

them. They eat with their fingers, and I will later on point out that it is not improbable that it is by this means that the organism of beri-beri gains an entrance to the system.

In regard to (*c*), it is not probable that members of Party No. 3 could have introduced the causal agent of beri beri and infected 90 prisoners by bathing at the same tank with them (though at a different time) without one or two of the party itself contracting the disease. On the contrary, it must be admitted that by placing Party No. 3 in the Administration Block and using it, as I did, as the extra mural party, I placed an effective screen between Parties Nos. 1 and 2 and deleterious outside influences.

I confess that it is impossible to eliminate the extra-mural factor (*d*). I know of no method by which it can be positively determined to day that a prisoner admitted to a gaol or other focus of humanity does or does not carry the cause of beri-beri upon or within his person. To grant that he does is to grant that beri beri is an infectious or contagious disease. All the facts that I have been able to accumulate point to the disease being infectious, but not contagious. I must admit that in this one particular the members of Party No. 1 and Party No. 2 to a lesser degree were not successfully segregated from extra-mural influences. This appears more plainly in the analysis of the 90 cases in relation to time of incarceration (*vide* para. 346). It will be observed that 13 cases in Party No. 2 developed beri-beri within fourteen days of admission to the Gaol. I have admitted above that it is probable that several of the 13 may have contracted the disease a short time previous to incarceration; the three who went down with the disease within seven days, at any rate. There is no doubt in my own mind that this was a large factor in the original mode of infection and still is a large factor in the continued prevalence of the disease in the Gaol.

Taking all facts of the observation into consideration, it must be admitted that the members of Parties Nos. 1 and 2 were successfully isolated, except in regard to the factor (*d*). To recognise this factor is to confess that beri-beri is an infectious disease. It is probable that certain of the 90 cases were admitted with infection in them, but it is positive that the great majority contracted beri-beri as the result of an infection that already existed in the Gaol.

Nature of the Infection.

Loss of appetite and oppression in the epigastrium is the first symptom complained of by those who contract the disease. I find it to be most pronounced in fatal acute pernicious cases, and the warrant for it is the angry inflammation and hæmorrhagic injection of the mucosa of the stomach and duodenum found *post mortem*. I have never found the *Ankylostoma duodenale* in any of these cases. Its ova was especially sought for, but was not found. There can be no question of the inflammation in these cases being due to it.

The theory of the causation of beri-beri that fits the above facts and all others observed in British Malaya is that beri-beri is due to a specific organism which gains entrance to the body *via* the mouth, that it develops and produces a toxin chiefly in the pyloric end of the stomach and duodenum, and that the toxin, being absorbed, acts atrophically on the peripheral terminations of the afferent and efferent neurones. Further, that the specific organism escapes in the faeces and lodges in confined places through accident or the careless personal habits of those affected by the disorder, and that in the presence of congenial meteorological, climatic and artificial conditions of close association from overcrowding, the organism becomes virulent and, gaining entrance to the healthy body in food, &c., contaminated by it, gives rise to an attack of the disease. The fact that the germ remains so closely focal can, I think, be explained by its being at once destroyed by the action of direct sunlight or that the presence of CO_2 or some other gas is necessary for its virile development. It seems from my observations here that the active stage of the organism in the body is between three and four weeks. I base this estimation on the facts that the preliminary feeling of oppression in the epigastrium ceases at the end of about three weeks, and that it is rare to find the lesion of the gastric and intestinal mucosa in cases of only six weeks' standing.

"Le Caducée," April 15, 1905.

Tropical Ulcers.

H. Vincent has described a small coccus found in an ulcer contracted in Guadeloupe that does not grow in ordinary media and not staining by Gram. Usually the ulcers are due to the bacilli found in hospital gangrene associated with a spirillum. In healthy subjects the bacilli produce little effect. The author has failed to inoculate himself. In subjects debilitated by residence in the Tropics, the slightest contamination of wounds produces extensive ulcers.

The treatment recommended is scraping to remove all dead tissue, then irrigating with perchloride of mercury or carbolic acid, followed by dry dressing with chloride of lime, in the strength of 1 in 10 boric acid for severe cases, and 1 in 15 for mild cases.

T. P. B.

"Archives Med. Milit.," No. 9, 1904.

Latent Leprosy.

Pelges describes the case of a man who left the Navy in 1882 after four years' service, most of the time being spent in the East, where he met individuals in the condition he is now in.

He remained in perfect health and worked as a fisherman until 1899, when as the result of exposure he was laid up for several weeks, having whitlows while convalescent. But a diagnosis of leprosy was not made until he was admitted to hospital in August, 1903, twenty-one years since he had seen a case of leprosy.

T. P. B.

"Lancet-Clinic," Cincinnati, April 29, 1905.

Piroplasmosis Hominis. By P. M. Ashburn.

The paper by Ashburn gives an account of one case of "Spotted Fever" reported in the Bitter Root Valley and in the vicinity of Missoula Montana during the year 1904.

THE

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SELECTIONS

FROM

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Colonial Medical Reports—No. 9—British Guiana—(*continued*).

Deaths.

The subjoined table shows number, causes, &c., of deaths in the hospital.

No.	Initials	Sex	Age	Date of admission	Date of death	Days in hospital	Cause of death	Remarks
1	A. M.	F.	40	May 24	June 2	9	Pneumonia	In stage of desiccation.
2	J. H.	M.	61	June 15	June 25	10	Confluent smallpox ..	Hæmorrhagic?
3	S. M.	F.	11 days	July 4	July 11	7	(Marasamus and) confluent smallpox.	
4	A. G.	M.	23 days	July 18	July 24	6	Confluent smallpox ..	Malignant form of disease.
5	H. D.	M.	1 day	Aug. 22	Aug. 23	1	Prematurity	Mother with smallpox.
6	R. D.	F.	30 days	Aug. 25	Aug. 30	5	Confluent smallpox ..	Malignant.
7	S. L.	F.	23	Aug. 25	Sept. 4	10	Acute general tuberculosis	Convalescent conf. smallpox
8	D. C.	M.	4	Aug. 7	Sept. 7	31	Malarial coma	Pernicious malaria.
9	R. S.	M.	70	Aug. 14	Sept. 17	34	Senile dementia and diarrhœa.	In stage of desiccation.
10	B. R.	F.	18 days	Oct. 14	Oct. 20	6	Marasmus	Infantile atrophy.
11	M. C.	F.	36	Oct. 2	Oct. 22	20	Confluent smallpox ..	Phagedæna of breast.
12	T. B.	M.	15 days	Oct. 19	Oct. 25	5	Confluent smallpox ..	Malignant.

With the exception of No. 10, all the deaths are attributable, either directly or indirectly, to smallpox. The infants, coloured and one white, turned almost black before they died, and the disease in them was of a very malignant form. The case of tuberculosis ran a very rapid course. According to McCombie, this disease occasionally develops during convalescence from smallpox.

No. 9 was an old vagrant in the stage of senile decay and cerebral softening, with smallpox grafted on an already feeble body.

No. 5, a premature child, but showed no external sign of disease, although the mother suffered severely. No. 1 I attribute to septic pneumonia from pustules in the throat.

The mortality on 1,434 would be ·90 per cent., and on 1,330, ·83 per cent., exceedingly low undoubtedly, but not unrecorded in the literature of epidemics.

But if the mortality is low, the suffering, on the other hand, has been so great that only those who have come into immediate contact with the unfortunate victims can realise it. Hancock, writing on a recent epidemic of smallpox in Iowa, returns the mortality at *about* 1 per cent. Bracken, discussing a "peculiar mild form of smallpox," which appeared in various parts of America, states the striking fact that the total mortality was only a little over 2 per cent., and indeed in some localities without fatal cases. Further, the variation in mortality is well shown in the "American Year-Book of Medicine" (1903), in which the *mean death-rate* from 1880 to 1899 in various countries works out as follows:—

Death-rate per Million.

Germany	Mean	1·8 per million.
Scotland	,,	5·3 ,,
Ireland	,,	9·0 ,,
Sweden	,,	9·3 ,,
Switzerland	,,	22·6 ,,
Holland	,,	24·2 ,,
England	,,	33·8 ,,
Italy	,,	179· ,,
Japan	,,	201·0 ,,
Belgium	,,	206· ,,
Austria	,,	358· ,,
India	,,	475· ,,
Hungary	,,	516· ,,
Spain	,,	605· ,,

The following table shows the number of admissions during the period April, 1903, to February, 1904. From this it will be seen that these were highest in July, and that the months of June, July, August and September account for the bulk of the patients:—

1903.	April	56
	May	151
	June	234
	July	311
	August	312
	September	168
	October	118
	November	40
	December	7
1904.	January	5
	February	2

Concluding Observations.

Pitting was noted in all cases of confluent smallpox and a fair number of discrete. Generally speaking, the pits were *irregular* though well-marked and permanent depressions, and not as typical as the regular foveated cicatrices observed in white skins. I have noticed the same condition in East Indian immigrants. So also it was noticed that depigmentation of the cicatrices about the face was almost *nil* or slight, as compared with white skins. Very little change of colour in black skins could be observed as the papules gradually became pustules. Although in the face typical pits were not common, on the body, on the other hand, notably the limbs, there were several cases of resulting foveated but very shallow cicatrices with absence of pigment.

On Face only.

Elevations.—In a small proportion of cases, confluent and discrete, instead of depressions, marked elevations remained with the falling off of the crusts. I had several opportunities of watching their course, which was in brief this: A thin scab would form on each; after a time it would come off; the process would repeat itself for some weeks and then, after a variable period, the elevations would reach the level of the skin and later would become actual depressions. Trousseau, in his "Clinical Medicine," describes the same appearances.

"Eruptive Fever."

The subject of chief interest during the year was the introduction into the district of the "eruptive fever" from Trinidad. The first case was that of a woman, who arrived here on April 5th and immediately developed symptoms pointing to the invasion of the disease; she subsequently infected five others. The disease further effected an entrance on three other occasions, but owing to the experience gained in the first case, as soon as a diagnosis was made, they were isolated and the infection did not spread. An isolation station was established at the Ballast Ground, to which were sent all cases developing the disease; such cases in the first instance came from the town and from St. John's and St. Mark's, and subsequently from the shipping after quarantine had been imposed against Trinidad. Fifteen cases in all were treated at the isolation station. There were no deaths. The station was occupied from April 19th to July 21st, and the average stay of each case was 28·92 days, excluding one convalescent case from a vessel riding at quarantine, which was admitted for eleven days after all the others had already been discharged.

No case was discharged till desquamation, was complete. The average duration of the disease, reckoning from the initial symptoms of the invasion till the completion of desquamation was found to be 34·57 days.

There have been marked divergent opinions among medical men in the West Indies as to the exact nature of this disease, which has given rise to a good deal of discussion generally, some of a very polemic character; but the opinion gained ground with experience that it was variola characterised by the mild nature of the disease; in this view, accepted by the majority of medical men, I concur.

It would be of interest to record the characteristics of the disease as observed here. It was communicable, as demonstrated by the first case introduced conveying the disease to certain inmates of the house. In four cases it developed within fifteen days of contagion, so its incubation period can be placed at some time within that limit, probably fourteen days. The invasion was marked by general malaise, fever and headache, the temperature being generally 101° F.; the presence of backache was not marked; these symptoms lasted for three days, when the rash appeared and the temperature dropped.

The eruption was general, appeared first on the forehead and face, where it was at times very abundant, then on the arms, and during the following days spread over the body, the palms of the hands and the soles of the feet being the last to be affected; its presence in the soles sometimes rendered walking painful for a few days—this occurred about the ninth day—the mucous membrane of the mouth and nostrils was sometimes affected. It did not come out in successive crops on the same part of the body, but merely developed in different localities as it made its appearance. The rash consisted of hard papules which slowly enlarged for three or four days and then became partially vesicular at the apex, while the rest of the papule remained hard and prominent; by the sixth day of the eruption the contents of this vesico-papule presented a yellowish appearance like wax, then the pellicle ruptured and there was only a small amount of secretion inside the vesicle—about this time there might be a slight return of febrile symptoms, with perhaps sore throat or conjunctivitis—soon the vesicular apex became brushed off and a distinct tubercle was left. About the ninth day of the eruption pigmentation began to appear. This was a marked characteristic of the disease, till finally were seen tubercles or macules, paler in their centres than the surrounding skin of the patient, with a very dark areola of pigmentation around their bases. As time went on these tubercles became less prominent and both they and the macules contracted, gradually losing their pale centres, while the pigmentation remained and gave an appearance eventually as if ink had been dashed on the part. This black pigmentation occurred in patients with a black skin; the pigment varied in intensity according to the colouring of the skin, in light skins it would be brown.

There was little or no proper pitting, a roughened condition of skin remained from slight prominences of the tubercles and pin-point holes in the skin. This description applied chiefly to the eruption on the face; on the body and extremities the papules passed into better formed vesicles and finally approached nearer in appearance to a pustule, then gradually dried up and when the pellicles fell off a distinct elevation, not a proper tubercle, or a macule, was left. There was no marked umbilication and no crusts were formed, but fringes of skin, remnants of the old vesicles, gradually separated; this process continued on the average up to the thirty-fourth day of the disease, when the patient was considered free from infection.

From the description given it will be seen that the disease differed from chicken-pox in the character and course of the eruption—the hard papules lying at a deep level of the skin, and vesiculating late and partially only with the resulting tubercles in places; not the characteristic pearly, glassy vesicle of varicella. It differed, again, in the abundance of the rash on the face and in its marked prevalence in the palms and soles and in the length of time the disease took to subside.

From typical smallpox it differed in the great essential that the constitutional symptoms were exceedingly mild in proportion to the amount of rash present—some of these cases had the face and body literally covered with a rash as described above, and yet on the eighth or ninth day, apart from some malaise, were quite cheerful and strong—it differed, again, in the absence of an offensive odour, the absence of crust formation and proper pitting, the absence of marked umbilication and complete pustulation.

The relationship, however, of vaccination to the disease was marked, as will be seen by two sets of experiments: I., dealing with the effect of vaccination in preventing the disease, and II., the failure of vaccination on those who had recently suffered from the disease.

I.—Of eleven inmates of a house, one contracted the disease in Trinidad which developed after returning home. Three submitted to vaccination,

which was successful, and did not contract the disease. One had suffered from smallpox in infancy and did not contract the disease (vaccination subsequently failed in this case). Four would not submit to vaccination and contracted the disease. The remaining two were men, not vaccinated, but who had little to do with the house and did not contract the disease.

II.—Fourteen cases who had suffered from the disease were vaccinated during convalescence and some again subsequently, and in only one case was there a vaccine vesicle produced.

The means adopted for stamping out the disease were as follows:—

(1) Observation of passengers arriving from Trinidad for fourteen days; then later on imposition of—

(2) Quarantine for sixteen days of vessels with crew and passengers from the same port.

MEDICAL REPORT OF No. 2 DISTRICT FOR THE YEAR 1903.

By P. F. MACLEOD.

RICHMOND HILL,
February 26, 1904.

Besides the facts mentioned in the monthly reports there is nothing of interest to add to this report.

Sanitary Conditions.

The sanitary condition of the district is exactly as it has been for years, no improvement has taken place in the manner in which the people live. No attention is paid to sanitation neither in dwellings nor their surroundings, conditions that to the intelligent mind should be pregnant factors in causing and disseminating disease. Yet the health of the inhabitants does not appear to be much affected thereby.

[illegible] assumed an epidemic form, and the only need be made of was an unusual nfantile diarrhœa in the months

nis class was considerably above months. Meteorological coning, and exposure I regard as the causation.

Vater Supply.

er supply in the lower parts of er that should receive the conovernment. The inhabitants are m pond-water during the wet months have to travel miles to y article of life, and then it is e that is liable to contamination. r vaccination were fairly regular

aws came under observation.

OF No. 3 DISTRICT FOR THE YEAR 1903.

N. S. DURRANT.

MORNE GAY,
January 30, 1904.

3 District during 1903 was good. the year the alarm occasioned by case stated to be one of varioloid rge's caused extra efforts to be ople vaccinated. In this district ult population was in vain. All infected places were examined ht, but no case, fortunately,

f the year whooping-cough broke e of chicken-pox or measles when number of years, only stops when district has had the specific

number of new board cottages e prosperous.

vacation leave from April 24th 03.

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The details of the work performed during the six months are:—

Vaccinations	253
Free medical and surgical attendances	512
Labourers attended under Government scale of fees	584
Death certificates	37

Medical Report of No. 4 District for the Year 1903.

By R. D. O'Neale.

Gouyave,
February 15, 1904.

The general health of the district was fairly satisfactory during the whole year, with the exception of the diseases as mentioned below.

Malaria fever was very prevalent, it being entirely absent from the district for only two and a half months, March, April, and half of May. The most severe and greatest number of cases occurred during the month of October. The disease is accountable for fourteen of the certified deaths.

Whooping-cough.—During the year a severe epidemic of whooping-cough disturbed the health of the children; commencing in June, it did not completely disappear until the month of December, and then only from the want of fresh subjects to attack. Although the number of cases attended was large, and the type of the malady, especially at the commencement of the epidemic, severe, the deaths recorded from such a fatal infantile disease were comparatively small, the total number being only seventeen.

Dysentery.—A good many cases of dysentery were attended, but this disease did not during any month of the year assume any epidemic form. The greatest number of cases were attended during the month of October, and the cause and origin of the disease appears in the majority of cases to have been malarial.

Sanitary Condition.—There is nothing of importance to report in the sanitary condition of the rural portion of the district; the condition of the roads leading to some of these villages has already been pointed out by me in my monthly reports, and is worthy of attention.

The sanitary condition of Gouyave may be said to be fairly satisfactory. Although a good deal has been done by the Sanitary and Town Boards with respect to the abatement of nuisances and cleaning of the town, the drainage of the Duncan's Town portion is in much the same condition as pointed out by me in my annual report of 1899, doubtless the carrying out of a proper and efficient system being prevented by the heavy cost it would entail.

Water Supply.—The proposed new water supply to Gouyave will undoubtedly prove a great boon to the inhabitants. A better supply than the present one has been a long-felt necessity.

Vaccination.—Under the head Vaccination the attendance was very satisfactory, 308 successful vaccinations being performed; compared with the previous records of four years this is the largest number performed in any year. The Chaumier's lymph gave most satisfactory results.

Medical Report of No. 5 District for the Year 1903.

By H. Bishop.

St. Patrick's,
February 2, 1904.

Malaria.—The endemic disease malaria formed a large percentage of the cases that came under observation, particularly during the latter half of the year. The disease was not confined to the more swampy localities, but was met with, though less frequently, in the hilly parts of the district. The type was usually the mild quotidian, for which, unless the attack was unduly prolonged, the patient did not as a rule seek medical treatment. Chronic invalidism with organic disease, the result of old-standing malaria, was also frequently met with.

Improper feeding and intestinal parasites were largely responsible for the gastro-enteric disorders so frequently met with among children.

Dysentery.—During the month of August a few cases of dysentery of a mild type were seen. In October the disease again appeared, and there was a steady increase in the number of cases during November, when it threatened to become epidemic. At the end of the year there were still a few cases under treatment. The disease was confined to the St. Patrick's portion of the district. In the more educated classes, where instructions as to diet, which forms a very important element in the treatment of these cases, were faithfully carried out the disease never proved fatal. Among the less educated, either from ignorance or inability to carry out the necessary measures, the number of deaths were quite out of proportion to the mildness of the disease. Children and the aged suffered most severely.

Whooping-cough.—Almost all the children in the district under five years of age suffered from the epidemic of whooping-cough which prevailed during the last seven months of the year. The epidemic *per se* did not cause many deaths, but where concurrent gastro-enteric disorders were associated with it, it certainly aided in bringing about a fatal termination.

Eruptive Fever.—One case of "eruptive fever" occurred at Bonair, St. Mark's. The patient was transferred to the isolation station at St. George's, and vigorous measures were adopted to prevent the spread of the disease. These, happily, proved successful.

Yaws.—The disease "yaws" was only by accident encountered. Those affected never seek medical treatment, the popular idea being that doctors' medicine "cures" the disease too rapidly only to cause it to break out afresh with renewed vigour at a later date.

Consumption.—Consumption was more frequently met with than the climatic conditions would lead one to expect. This in some measure can be accounted

for by the housing of the poorer classes, which in some instances is deplorably inadequate. Small, dark, ill-ventilated, one-roomed huts provide shelter for large families; a condition the reverse of hygienic.

During the first half of the year the health of the district may be said to have been very fair, and if taken as representing the normal standard would make that of the second half, when an epidemic of whooping-cough was raging and dysentery and malarial were unduly prevalent, fall far below that standard.

Sanitary Condition.—The primitive hygienic conditions which obtain in the district, I take it, have always existed, and where the population is scattered did not tend to affect to any appreciable extent the public health. These conditions, however, fall far short of the requirements of towns.

The street gutters of the town of Victoria were not kept in a satisfactory condition during the year. It would seem to require the services of at least two men, constantly employed, to cleanse and maintain them in a sanitary condition. The present arrangement is altogether inadequate.

Water Supply.—The town of Sauteurs has suffered in health from the want of a supply of wholesome water and from its proximity to swampy ground, and in the simple unambitious programme for the gradual improvement of the sanitary conditions of the colony by the reclamation of swampy land it, a large and important centre of population, flanked on either side by swampy ground, has a just claim to prior consideration.

Burials.—Burials were frequent in those places removed from the regular burial grounds. From the Duquesne Valley the dead were never taken to the burial grounds, but interred in the cocoa cultivations there, perhaps in dangerous proximity to houses or water supplies, or at an insufficient depth; no supervision being possible in those cases to ensure a proper burial.

The number of prescriptions issued under the Medical Relief Scheme were:—

Paupers	185
Children under 10 years	817
Labourers over 60 years	86
Police and prisoners	25
Labourers under scale of charges ...	1,213
Total attendances ...	2,326
Number of inquests attended ...	4
,, successful vaccinations ...	270

The lymph supplied gave uniformly good results.

Medical Report for No. 6 District.

By W. A. D. Whiteman.

St. Patrick's,
February 25, 1904.

Sir,—I have the honour to submit my report on No. 6 Medical District for the year 1903. Having, however, only been transferred to this district on April 20th last, I am only able to deal with the last seven months of the year.

Health.

During the period under review the health of the district must be characterised as having been exceedingly bad, and the figures below show the enormous amount of work entailed in consequence.

Eruptive Fever.—On April 20th the police reported a case of this disease at River Sallie, which on examination proved only too true. In consequence of this discovery an isolation station was promptly established just outside the village in the River Sallie old house, and this case, together with three others which subsequently occurred, was there isolated and successfully treated. Having already expressed my opinion as to the nature of the disease in a special report on the subject, and given details as to the measures adopted to prevent its spread in my monthly reports, I will now only express my conviction that in dealing with a similar threatened invasion at any future time the rules and regulations drawn up by the General Board of Health might with advantage be modified to some extent. I am of opinion that one large isolation station should be established in St. George's to which all the earlier cases occurring in the districts should be sent, and only when the disease assumes epidemic dimensions should an attempt be made to establish district isolation stations. I make this suggestion knowing the difficulties attendant on securing suitable buildings for isolation stations, and even when these are secured the further difficulties of complete isolation among so ignorant and unreasonable a populace. With incomplete isolation each district station becomes a huge centre of infection and the danger to public health correspondingly great.

Whooping-cough.—An epidemic of this disease prevailed during the whole seven months under review, and played havoc among the children. Even now, at the date of this report, there are still some cases under observation.

Dysentery.—This disease made its appearance towards the end of June, and spreading slowly but surely, continued up to the close of the year. It started in the lowlands where the water supply is of the worst, and though after a time it became general in its distribution, I cannot modify my previously expressed opinion that the cause of these outbreaks is the impure water supply in certain localities, and under certain conditions the disease must necessarily be a regular annual visitor. That its spread becomes more or less general after a time admits of ready explanation, and does not in any way detract from the value of the theory which I venture to advance.

Malarial Fevers.—During the months of July, August and September various types of malaria were prevalent throughout the district, and several cases of typho-malaria occurred in the higher lands where the water supply is from springs pregnant with decomposing vegetable matter.

Yaws.—This loathsome disease is as prevalent as ever, and yet there are but few applications for treatment, it being accepted by the labouring classes as an unavoidable evil.

Venereal diseases appear to be steadily on the increase, syphilis occupying a very prominent position,

yet it is wonderful to note the want of appreciation of the gravity of the disease on the part of victims.

Sanitation.

As in other districts so in this, the sanitary measures adopted are of the most primitive, there being an utter disregard of the most elementary principles of hygiene. It is, therefore, not surprising that so much sickness prevails, and we can only attribute our freedom from severe epidemics of infectious diseases to Providential protection.

Infant Mortality.—Again, the infant mortality is exceptionally high, due entirely to the want of proper food and care; and in this connection I must draw attention to the undoubted degeneration of the rising generation, a fact that must be patent to the most casual observer, and one of serious import to the future welfare of the Colony.

Burials.—I must once more draw attention to the danger to public health arising from the indiscriminate manner in which the dead are buried. The time is now ripe for legislation on this subject, and even more so for the provision of public cemeteries within reasonable access of the different centres of population. At the present time there are but two in the whole parish of St. Patrick, both situated within the town of Sauteurs, and respectively under the complete control of the officiating ministers of the two predominant religious denominations. Such a state of affairs needs no comment, and no blame could be attached to an ignorant populace for gross errors committed in this direction.

Water Supply.—Water is plentiful throughout the district, but with few exceptions is unfit for human consumption.

Vaccinations.—One hundred and seventy-four vaccinations were performed during the seven months, a result due in the main to the excellent quality of the lymph supplied, and also to the eruptive fever scare and prosecutions for non-compliance with the vaccination ordinance.

The attendances under the Medical Relief Scheme (for the seven months) were as follows:—

Free—Labourers' children	1,797	
Paupers and labourers over 60	687	
Police and prisoners	11	2,495
Payment tickets		943
Deferred payment tickets		469
Total ...		3,907
Vaccinations		174
Deaths certified		133
Grand total ...		4,214

Medical Report for No. 7 District for the Year 1903.

By Edwin F. Hatton.

Grand Bras, St. Andrew's,
January 25, 1904.

Sanitary Condition.—The conditions of the rural part of the district offer very little scope for a sanitary report, as there are no public places, except the roads. The drains along many of these roads contain stagnant water throughout the wet season, and form breeding pools for Anopheles mosquitoes. When these pools are near dwelling houses they are certainly a source of danger in spreading malaria.

Water Supply.—The streams and rivulets from which the poorer classes take their water supply, are also a source of danger in spreading dysentery and typhoid. These streams are constantly polluted by manure and other refuse, which have been thrown under the cocoa, being washed into them, and by the washing of clothes in them.

Overcrowding and absence of light and ventilation in bedrooms, with no conveniences for the disposal of excreta, is the rule in the dwelling houses of the labourer and small peasant proprietors.

With regard to the town of Grenville, I can add nothing to my report of last year. There has been no improvement in the sanitary condition of the town. The local health authority tried to compel the town board to make some better arrangement for the cleaning of fish at the Fish Market, but met with little success, the legal procedure proving too cumbersome. After an unsuccessful prosecution in the police court, the town board did make some slight improvement in the scavenging around the Fish Market, but this is still far from satisfactory.

Vaccination.—Vaccination received a stimulus by the presence of smallpox in some of the neighbouring islands, and some four hundred persons were vaccinated in this district.

Smallpox.—On May 4th a man was found in Paraclete suffering from a mild and abortive form of smallpox. He and the other inmates of his house were isolated. This was done under a regulation of the Board of Health declaring "eruptive fever" to be an infectious disease.

This man had recently come from Carriacou where "eruptive fever" was prevalent.

Recent vaccination seems to have protected the other inmates, *i.e.*, his wife and three young children, as no other case occurred. On June 4th, after burning bedding and clothing, and fumigating the house, he was set free.

Whooping-cough.—Whooping-cough was epidemic in the first half of the year. Dysentery prevailed more or less throughout the year, and malaria during the second half.

Enteric Fever.—A few cases of fever of a typhoid type were seen at the end of the year.

Return of duties performed by the Medical Officer of District No. 7 during the year ended December 31st, 1903:—

Number of prescriptions issued—	
Free	1 624
Payment	1,579
Number of attendances on cases:—	
Of Pauper	369
Of Labourers' children under 10 years of age	1,199
Of police constables and prisoners ...	56
Of labourers under scale of charges ...	1,583
Number of deaths certified	153
Number of vaccinations successfully performed	334

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THE

Journal of Tropical Medicine

JUNE 15, 1905.

THE MONETARY VALUE OF LIFE.

AT the Indian Medical Service Dinner on June 8th Lieut.-Colonel Freyer made allusion to the subject of medical men in India not being allowed to accept large fees in return for successful medical treatment of natives of India. This has been a vexed question for some time, and it crops up rather acutely now and again. The rule in British governmental circles is that not only no fee but no present even may be accepted for the public work done, or proposed to be done, by Government officials. Did no such understanding exist, it is easy to conceive that in many ways corruption might creep into public life in connection with various works and undertakings. The extension of this rule, however, to those who are the means of lessening bodily suffering and the cure of disease is stretching the tether to an extent which smacks of prudery. The imposition of an order regulating the amount a man may pay his doctor seems to be either a stage of advanced socialism or of autocratic interference with the subject, which may or may not be for the public good. In India the former cannot be said to obtain, and the latter would seem to be dictated from a high standpoint of benevolent paternity.

The question of medical and especially fees for surgical operations on which life and death actually depends, is a curious anomaly. A surgeon who receives 100 guineas for an operation by which he saves a rich man's life is supposed to be highly paid. Within a few weeks afterwards the same man may spend that sum and more in one evening's entertainment of his friends—a thank-offering for his recovery—to which in all probability the man who saved his life is not invited. The fact is, human life is cheap even amongst the wealthy and high-placed, and judging by the payment of the man who is the instrument in prolonging that life, 100 guineas is about the maximum in this country at which the patient or the patient's friends and relations value his or anyone else's life. In India some of the rulers set a higher value upon their lives, and consider one hundred times 100 guineas not too much to be restored to health. It is a mere question of reward for value given, and a man is the best judge of the value life is to him.

The sum allowed to be received by medical officers in the Indian medical service on the one hand, and the sum offered them by native princes or rich men for having cured them of disease on the other, has caused the resignation in recent years of at least one well-known medical officer. That this should be so may be consonant with discipline, but no such regulation was in existence when that officer joined the Service, otherwise in all probability he, along with many other capable men, would never have been induced to join it. Breach of contract does not hold good in the Services, and men are bound to submit to any rules and regulations which may be imposed; but a breach of contract is neither just nor equitable, however sheltered by autocratic *régime*, and in the long run the injustice tells in the case of every Service, for either good men leave it or refuse to accept office in its ranks.

BRITISH MEDICAL ASSOCIATION.

Seventy-third Annual Meeting, Leicester, July 24th, 25th, 26th, 27th and 28th, 1905.

Section M.—TROPICAL DISEASES.

President: RUBERT WILLIAM BOYCE, M.B., F.R.S., London.

Vice-Presidents: ANDREW DUNCAN, M.D., London; FLEMING MANT SANDWITH, M.D., London.

DEAR SIR,—It is hoped that the Section on Tropical Diseases at the forthcoming meeting of the British Medical Association will be well attended, and that all those interested in this branch of medicine will endeavour to be present and will unite to make the meeting successful, both by taking part in the discussions and by contributing papers.

The following subjects have been selected for discussion:—

Wednesday, July 26th.—"Tick Fever."

Thursday, July 27th.—"Sprue and Hill Diarrhœa."

Friday, July 28th.—"Tropical Diseases of the Skin."

The Section will meet at 10 o'clock each day.

The following gentlemen have already promised to take part in the discussions or to contribute papers: Dr. H. E. Annett, Prof. Rubert Boyce, Dr. Anton Breini, Mr. James Cantlie, S. R. Christophers, M.B., I.M.S., Dr. Andrew Duncan, Dr. J. E. Dutton, Sir Patrick Manson, Dr. W. T. Prout, Prof. Ronald Ross, Dr. L. W. Sambon, Dr. F. M. Sandwith, Dr. J. W. W. Stephens, Dr. Wolferstan Thomas, Dr. T. L. Todd.

We shall be obliged if you will let us know at your earliest convenience if you will be able to take part in any of the above discussions, or if you propose to contribute a paper on some subject.

Papers bearing on the discussion or otherwise will be read for gentlemen unable to be in England for the meeting.

The Secretaries will be glad to receive pathological specimens, drawings, photographs, and microscopical preparations for exhibition at the meeting.

We are, Dear Sir,

Your obedient servants,

G. A. CLARKSON, F.R.C.S., *Hon. Sec.*, 11, Southgates, Leicester.

J. H. M. MACLEOD, M.D., *Hon. Sec.*, 11, Harley Street, London.

Regulations for the Conduct of Sections.

(1) Papers at the Sectional Meetings must not occupy more than fifteen minutes in the reading, and no subsequent speech must exceed ten minutes.

(2) Authors are requested to send short abstracts of their papers not later than May 15th.

(3) The text of papers submitted for publication in the *British Medical Journal* as part of the report of the Section should represent what is actually read in the Section.

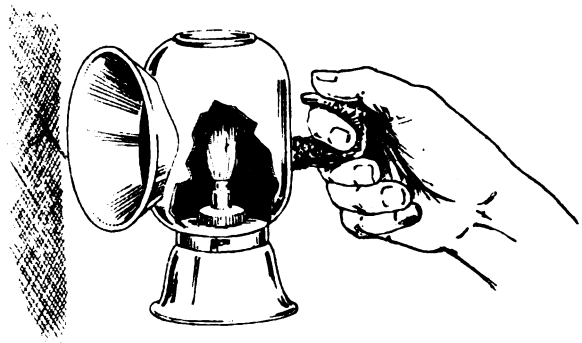
(4) Each author should hand the text of his paper in proper form for publication to one of the Secretaries of the Section immediately after it is read, or at the latest at the end of the day's meeting of the Section. Neglect to comply with this request may result in the omission of the paper in question from the proceedings of the Section published in the *British Medical Journal.*

(5) Papers read are the property of the British Medical Association, and cannot be published elsewhere than in the *British Medical Journal* without special permission.

(6) Authors of papers not read have no claim for the publication of their papers in the *British Medical Journal. Papers cannot be taken as read.* If not read they form no part of the proceedings of the Section.

THE SWATOW MOSQUITO LAMP.

THE value of the Swatow mosquito lamp as a method of destroying mosquitoes is known to Europeans in South China and the Straits Settlements, and has been used by the Chinese for a long period. I am tempted to mention the value of this lamp, in the first place, because I am fully convinced of its efficacy when properly used, and because I have seen a communication addressed to Messrs. Montague, 101, New Bond Street, London, from a high medical authority in India. The communication runs thus:—"With reference to Cantlie's mosquito lamp you sent me, I beg to point out that the lamp in question seems to be a fraud. I lighted it with spirit in several rooms and it did not attract a single mosquito." I am much obliged to Messrs. Montague and to the medical officer in India for having drawn my attention to this failure, as it enables me to state the use to which this



lamp may be really put. The lamp will not *attract* mosquitoes, it will only destroy them when the lamp is *brought to them.* It is chiefly useful *inside* the mosquito net. Supposing one has, on retiring, tucked the mosquito net in all round the mattress, and then discovers that one or more mosquitoes remain inside the net, it is easy to raise the net sufficiently to reach the lamp, if it is conveniently placed by the side of the bed, to light the lamp and to kill the mosquito by placing the large mouth of the lamp over the mosquito, which when thus attacked attempts to escape by the upper opening or chimney. In its passage, however, it is necessarily exposed to the flame of the lamp and burnt. The light of the lamp when thrown on the mosquito seems to paralyse the insect, for, as a rule,

it remains quite stationary until the mouth of the lamp is made to touch the net (or other surface) on which the mosquito may have happened to alight.

The "oil" for the lamp must *not* be spirit nor petroleum, or any other readily inflammable substance, otherwise there is danger of setting fire to the bed. Native oil used for lamps is the best:—rape oil, nut oil, or any vegetable oil used for burning in lamps by natives of warm climates is what is required. I lay no claim that this lamp should be called "Cantlie's," as it is merely the lamp known as the "Swatow," extensively used in South China as a mosquito destroyer, and being convinced of its efficacy, I induced Mr. Montague to make and supply it. It is only necessary to take the lamp on one's travels, as oil of the kind required can be had from the natives of any district.

JAMES CANTLIE.

Abstracts.

ON A PARASITE FOUND IN PERSONS SUFFERING FROM ENLARGEMENT OF THE SPLEEN IN INDIA (THIRD REPORT).

By LIEUT. S. R. CHRISTOPHERS, M.B., I.M.S.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. New Series, No. 15, 1905.

ABSTRACT.

THE DEVELOPMENT UNDERGONE BY THE PARASITE IN CITRATED BLOOD AT A LOW TEMPERATURE.

THE correct zoological position of the parasites described in my previous reports is extremely uncertain. They have been variously classed as Piroplasmata—the view held by Laveran and Mesnil and by Major Donovan, I.M.S.; as Trypanosomata—the view of Major Leishman, R.A.M.C., and of Marchand and Ledingham; as protozoa of an unknown nature—the view first put forward by Major Ross, I.M.S., and later taken up by others; and as the spores of a microsporidian.

Captain Rogers, I.M.S., recently announced that, by adding blood, obtained by splenic puncture from cases of splenomegaly caused by the parasites, to a small quantity of sterile citrate of sodium solution and keeping it at a temperature of 22°C. for two or three days he had succeeded in observing the development of the parasites into trypanosomes.[1]

Observers who had put forward the opinion that the bodies are a stage in the development of a trypanosome looked upon Captain Rogers' discovery as a confirmation of this view of their nature, but it was apparent from an examination of the illustrations attached to his article that the bodies which Captain Rogers regarded as fully-developed trypanosomes differed considerably from ordinary trypanosomes found in animals. They possessed no undulating membrane, the micro-nucleus or centrosome was situated at the end of the parasite from which the flagellum emerged, and the flagellum appeared to pass out of the parasite directly from the micro-nucleus. In a later communication[2] Captain Rogers recognised these differences, and stated definitely that in no instance was an undulating membrane present, nor did the flagellum pass forwards towards the macro-nucleus.

In the main I have been able to confirm Captain Rogers' results. Indeed, most of the forms figured by him, including very elongate forms, have occurred in my preparations. In addition I have been able to observe certain further appearances not described by him, which appear to take place at a later date, and to add some details of description. On the other hand, I have been unable to accept his conclusions regarding conjugation of the large oval forms, or to be convinced that the nature of the bodies is yet finally settled.

Technique.—A 10 per cent. solution of citrate of sodium in distilled water is freshly prepared.

Some time before the operation of spleen puncture is to be carried out, a Burroughs and Wellcome "all-glass" syringe (small size) fitted with a platino-iridium needle is rinsed out with the citrate solution and placed in a test tube with the piston resting upon a pad of wool. About ·5 c.c. of citrate solution is left in the syringe, and the cotton pad is damped with the same. The test-tube is plugged, and the whole sterilised at 120° C. for half an hour in the autoclave.

At the bedside the test-tube is tilted to allow the syringe to fall needle downwards against the plug. The plug is then removed far enough to allow the barrel of the syringe to be seized by the fingers. It is convenient to have three or four prepared syringes at hand, in order to reduce the amount of preparation necessary at the bedside.

Immediately before puncture any excess of fluid is ejected from the syringe, only a little being allowed to remain in the needle and nozzle. A successful puncture should one-third or one-half fill the barrel of the syringe.

Blood from the syringe is ejected with the fullest precautions as to sterility into small sterile tubes. I have found "arsenic tubes" (straight 3″ × $\frac{3}{8}$″) very suitable, their narrowness and length being antagonistic to desiccation and contamination during the frequent examination of the blood. For sterilisation these tubes may be heated to 120° C. in the autoclave, or merely passed through the flame till "browning" of the cotton plug takes place. *No citrate solution is added to the tubes.* After blood has been ejected into the tubes, I have found it convenient to enclose them in a small tin canister containing a little damp wool and provided with a tightly fitting lid.

As I was obliged to use an ordinary ice chest, the cultures were exposed to a somewhat varying temperature, but it did not rise above 24°C.

Blood for examination is removed by means of a platinum loop, great care being taken each time to prevent bacterial contamination. As the tubes employed were long and narrow, it was necessary to use a long, rather thick platinum wire instead of the ordinary loop with a holder.

Before removal of a drop for examination, the blood

[1] *British Medical Journal*, September 17th, 1904, page 648.

[2] *Quarterly Journal of Microscopical Science*, November, 1904.

is shaken up to mix the corpuscles and plasma thoroughly. This enables more satisfactory films to be made as well as ensures parasites being equally distributed. In good preparations the blood corpuscles remain unchanged for fifteen days or more: they cannot be distinguished under the microscope from the corpuscles of freshly drawn blood. The leucocytes show marked degenerative changes, and the nucleus becomes swollen and irregular. Nevertheless, in some cases, the variety of cell could be distinguished easily after several days.

Development.—Development of the bodies was observed in four cases. In one the preparation was examined every few days for a period of thirty-three days, at the end of which time the corpuscles were but little altered and no micro-organisms were seen in the films. The remaining cases, owing to the pressure of other duties, were not followed up so systematically, and in two of the cases commencing changes only, though of a convincing nature, were seen.

Case 1.—The patient had a greatly enlarged spleen reaching across the middle line of the abdomen and an irregular high temperature reaching to 102° F. and 103° F. at night. About ·75 c.c. of blood was removed from the spleen in the manner already described. In films made at the time of puncture parasites were fairly numerous. No clotting occurred, and when shaken up the blood retained for weeks a natural appearance.

Summary of Changes Observed.

There could be no doubt from this case that, under the conditions described by Captain Rogers, profound developmental changes in the bodies had taken place. These appeared to be of the following nature and order of sequence: enlargement together with changes in the large chromatin mass and the protoplasm, proceeding until the bodies are at least as large as a red blood corpuscle; fission occurring at least twice and forming groups of two and four large oval bodies loosely or not at all attached; formation of the vacuolic area and extrusion of the cement substance; flagellation of certain of the bodies, and the formation of numerous fission forms, many of which flagellate; finally, the formation of large groups of closely aggregate forms of various sizes. The time taken in this case for the different stages was as follows: large, fully-developed forms appeared by the fourth day; the vacuole, the extrusion of the cement substance, and the early stages of the flagella formation, all first appeared on the fifth day. Fully-developed flagella were not seen till the sixth day. Elongate flagellate forms were specially numerous on the sixth and seventh days. From the ninth day onwards the formation of masses of pear-shaped and irregular forms was the chief feature. Captain Rogers notes large forms on the second day and flagellate forms on the third day. He does not note any further stages than those seen on the fourth day, which correspond with those obtained by me on the fifth and sixth days.

Case 2.—The patient had a greatly enlarged spleen and an irregular high temperature. About ·25 c.c. of blood was obtained by spleen puncture. Bodies were rather scanty in a film taken at the time of puncture. In this specimen, after subsidence of the corpuscles, a slight clot formed in the plasma.

On the third day no development was noted. On the fifth day some large forms not quite so large as in the fully-developed bodies noted in Case 1 were seen. Most of the bodies had undergone little or no change. On the tenth day a good many quite unaltered bodies were seen, and some large forms at the same stage as those seen on the fifth day. Preparations were not again examined until the twenty-first day, when only one or two undeveloped bodies were noted. In this case development, although started, apparently failed to progress.

Case 3.—The patient had a greatly enlarged spleen and occasional slight rises of temperature. About ·25 c.c. of blood was obtained by splenic puncture. Parasites were fairly numerous in a film taken at the time. On the third day the culture was examined, but only a very few somewhat enlarged bodies were seen. On the tenth day fairly numerous forms with long flagella were seen. In this specimen the bodies were almost entirely free forms; a few groups were, however, present, and four or five bodies were often seen lying close together; a large proportion of the forms possessed flagella four or five times the length of the body of the parasite. The parasites were for the most part of an elongate pear-shaped form, and in many cases the extremity opposite to the flagellum was pointed, whereas the extremity from which the flagellum arose represented the thick end of the pear. In these forms, as in all those I have seen, the flagellum passed directly outwards from the small chromatin mass. A good many individuals showed small chromatin particles in addition to the two main masses. These were sometimes arranged in a row along one border of the parasite. In some of the more elongate forms there appeared to be large chromatin masses irregularly disposed, so that it was difficult to say which mass represented the macro-nucleus. Captain Rogers figures a similar condition in some of his forms.

In this case development had apparently differed somewhat in its nature from that seen in Case 1. This variability would appear also to have occurred in Captain Rogers' cases, since he describes on one occasion flagellate forms on the first day. In this connection it is worthy of note that in some cultures, although sterile, a much darker colour of the blood was seen than in others. It is, therefore, possible that all cultures may not be under precisely similar conditions.

Case 4.—The patient had a greatly enlarged spleen and an irregular high temperature. About ·5 c.c. of blood was drawn off by splenic puncture and placed in two tubes. The tubes were placed direct into a cool incubator at 22° C. On the fifth day some large characteristic bodies were seen resembling those seen in Case 1. The specimen was not examined later.

Although I have examined only a small number of cases, the results have been amply sufficient to corroborate the changes described by Captain Rogers. But, although the presence of a nucleus and well-marked blepharoplast and the development of a flagellum point to the bodies being a flagellate, I do not feel justified, either from my own observations or from an inspection of Captain Rogers' drawings, in stating

that they are *trypansomata*. The relation of the flagellum to the large chromatin mass, even in the very elongate forms, does not suggest that the characteristic arrangement met with in trypanosomes is in process of development. On the other hand, it cannot be denied that the forms bear a very close resemblance to some of the developmental forms seen in cultures of *T. Lewisi*, and further study must determine what relation, if any, exists between the new parasite and the *trypanosomata* of mammals.

COLONIAL CIVIL SERVICE.

Mr. Cecil Wray, District Officer of Kinta, South Perak, who has been acting for some time past as British Resident of Pahang, Federated Malay States, has been confirmed in that appointment. Mr. Wray entered the Public Works Department of Perak in 1881, and has since served in all parts of the various Malay States.

Mr. E. J. Brewster, District Magistrate of Lower Perak, who succeeds Mr. Cecil Wray as District Officer of Kinta, entered the service in 1878, and has already acted in the office to which he has been permanently appointed. He is also promoted to Class II. of the Federated Malay States Civil Service.

Mr. E. B. Wright, Barrister-at-Law, has been selected by the Secretary of State for the Colonies for the office of Chief Justice of the Seychelles, in succession to Mr. F. A. Herchenroder, who has been transferred to Mauritius as Procureur-General.

Mr. F. R. Winn-Sampson, Travelling Commissioner of Southern Nigeria, is officiating as Divisional Commissioner of the Eastern Division of the Protectorate.

Mr. F. Bisset Archer, Treasurer of the Gambia, has arrived in England on leave of absence. In consequence of the absence also of Mr. H. M. Brandford-Griffith, the Colonial Secretary, the duties of Colonial Secretary will be performed by the Governor, and those of Colonial Treasurer by Mr. T. E. Peirce, the Collector of Customs.

Mr. A. T. Dew has been appointed District Officer of Lower Perak, Federated Malay States. He was formerly in the Royal Navy, and in 1874 took part in the suppression of piracy on the Malayan Coast. In 1881, Mr. Dew became Magistrate and Collector of Perak, and subsequently served in the Straits Settlements, but returned to the Federated Malay States Service as a District Magistrate in 1888.

The Hon. F. A. Gibson, Collector of Customs and Registrar of Shipping, Mauritius, having left the Colony on leave of absence, Mr. Silas Graves has taken over the duties of Collector, and Mr. C. A. D'Avray those of Deputy Collector of Customs.

Mr. John Phillips, one of the Senior Superintendents of Civil Police of the Gold Coast Colony, has been promoted to the position of Assistant Commissioner of Police.

Mr. Claude Severn, Assistant Secretary to the Resident General of the Federated Malay States, acts as Federal Secretary during the absence on leave of Mr. A. R. Venning, who has come to England for six months. Mr. B. W. Elles, a Passed Cadet, acts as Assistant Secretary in place of Mr. Severn.

The death is announced of Mr. A. M. Walker, Assistant Conservator of Forests, Ceylon, who entered the service in 1885 and joined the Forestry Department after a special training in India, seven years later.

The Hon. Thomas Capper, Inspector of Schools, Jamaica, and Mr. David Balfour, Clerk of Courts, Kingston, Jamaica, will arrive in England next week on leave of absence.

Mr. W. C. Rae, Second Assistant Colonial Secretary of Mauritius, is to succeed Mr. L. Martin as Colonial Postmaster and Superintendent of Telegraphs of that Colony. Mr. Rae entered the Colonial Secretary's office twenty-nine years ago, and is the author of a work dealing with the constitution, practice, and proceedings of the Council of Government of Mauritius. Mr. Martin, the late Postmaster, has been connected with the Mauritius Civil Service for forty-six years, and has served in the departments of the Surveyor-General, Auditor-General, and Immigration Agent-General, and for the past fifteen years as Colonial Postmaster.

Mr. W. H. Lee-Warner, a Cadet of the Federated Malay States, has been selected for the office of Inspector of Schools, Negri-Sembilan, and Secretary to the Sanitary Board of Seramban.

Dr. R. Denman, Chief Medical Officer, Seychelles, has left the Colony on nine months' leave of absence, during which Dr. A. N. de Gruchy, the Assistant Medical Officer, acts for him.

The appointment of Mr. R. S. de Vere, District Commissioner of the Gold Coast Colony, has been terminated from May 17th, on the ground of ill-health.

Mr. J. R. Innes, Secretary to the Resident of Perak, acts as Senior Magistrate of Perak, and Mr. W. P. Hume, District Officer of Batang Padang, as Secretary to the Resident of Perak.

Mr. H. P. C. Strange, District Commissioner, Corosal, British Honduras, having left the Colony on six months' leave of absence, Mr. R. Wyatt, Assistant Superintendent of Police, performs the duties of his substantive office in addition to those of District Commissioner of Corosal.

Mr. J. S. Drieberg, Office Assistant to the Government Agent, Colombo, Ceylon, has been promoted to the office of Commissioner of Requests, and Additional Police Magistrate and District Judge of Colombo.

Mr. T. R. Bennett, jun., has been appointed a Junior Magistrate of Natal on probation.

Mr. H. Berkeley has been selected for the office of District Officer of the Perak New Territory, and has been promoted to Class III. of the Civil Service of that State.

Mr. W. Bowen Rowlands has undertaken the duties of Inspector of Mines in Selangor, Federated Malay States.

Mr. Laurence Lewton-Brain, Mycologist and Lecturer in Agriculture on the Staff of the Imperial Department of Agriculture for the West Indies, has accepted the appointment of Assistant Director of the Pathological Division of the Experiment Station

them. They eat with their fingers, and I will later on point out that it is not improbable that it is by this means that the organism of beri-beri gains an entrance to the system.

In regard to (*c*), it is not probable that members of Party No. 3 could have introduced the causal agent of beri beri and infected 90 prisoners by bathing at the same tank with them (though at a different time) without one or two of the party itself contracting the disease. On the contrary, it must be admitted that by placing Party No. 3 in the Administration Block and using it, as I did, as the extra-mural party, I placed an effective screen between Parties Nos. 1 and 2 and deleterious outside influences.

I confess that it is impossible to eliminate the extra-mural factor (*d*). I know of no method by which it can be positively determined to day that a prisoner admitted to a gaol or other focus of humanity does or does not carry the cause of beri-beri upon or within his person. To grant that he does is to grant that beri beri is an infectious or contagious disease. All the facts that I have been able to accumulate point to the disease being infectious, but not contagious. I must admit that in this one particular the members of Party No. 1 and Party No. 2 to a lesser degree were not successfully segregated from extra-mural influences. This appears more plainly in the analysis of the 90 cases in relation to time of incarceration (*vide* para. 346). It will be observed that 13 cases in Party No. 2 developed beri-beri within fourteen days of admission to the Gaol. I have admitted above that it is probable that several of the 13 may have contracted the disease a short time previous to incarceration; the three who went down with the disease within seven days, at any rate. There is no doubt in my own mind that this was a large factor in the original mode of infection and still is a large factor in the continued prevalence of the disease in the Gaol.

Taking all facts of the observation into consideration, it must be admitted that the members of Parties Nos. 1 and 2 were successfully isolated, except in regard to the factor (*d*). To recognise this factor is to confess that beri-beri is an infectious disease. It is probable that certain of the 90 cases were admitted with infection in them, but it is positive that the great majority contracted beri-beri as the result of an infection that already existed in the Gaol.

Nature of the Infection.

Loss of appetite and oppression in the epigastrium is the first symptom complained of by those who contract the disease. I find it to be most pronounced in fatal acute pernicious cases, and the warrant for it is the angry inflammation and hæmorrhagic injection of the mucosa of the stomach and duodenum found *post mortem*. I have never found the *Ankylostoma duodenale* in any of these cases. Its ova was especially sought for, but was not found. There can be no question of the inflammation in these cases being due to it.

The theory of the causation of beri-beri that fits the above facts and all others observed in British Malaya is that beri-beri is due to a specific organism which gains entrance to the body *via* the mouth, that it develops and produces a toxin chiefly in the pyloric end of the stomach and duodenum, and that the toxin, being absorbed, acts atrophically on the peripheral terminations of the afferent and efferent neurones. Further, that the specific organism escapes in the fæces and lodges in confined places through accident or the careless personal habits of those affected by the disorder, and that in the presence of congenial meteorological, climatic and artificial conditions of close association from overcrowding, the organism becomes virulent and, gaining entrance to the healthy body in food, &c., contaminated by it, gives rise to an attack of the disease. The fact that the germ remains so closely focal can, I think, be explained by its being at once destroyed by the action of direct sunlight or that the presence of CO_2 or some other gas is necessary for its virile development. It seems from my observations here that the active stage of the organism in the body is between three and four weeks. I base this estimation on the facts that the preliminary feeling of oppression in the epigastrium ceases at the end of about three weeks, and that it is rare to find the lesion of the gastric and intestinal mucosa in cases of only six weeks' standing.

"Le Caducée," April 15, 1905.

Tropical Ulcers.

H. Vincent has described a small coccus found in an ulcer contracted in Guadeloupe that does not grow in ordinary media and not staining by Gram. Usually the ulcers are due to the bacilli found in hospital gangrene associated with a spirillum. In healthy subjects the bacilli produce little effect. The author has failed to inoculate himself. In subjects debilitated by residence in the Tropics, the slightest contamination of wounds produces extensive ulcers.

The treatment recommended is scraping to remove all dead tissue, then irrigating with perchloride of mercury or carbolic acid, followed by dry dressing with chloride of lime, in the strength of 1 in 10 boric acid for severe cases, and 1 in 15 for mild cases.

T. P. B.

"Archives Med. Milit.," No. 9, 1904.

Latent Leprosy.

Pelges describes the case of a man who left the Navy in 1882 after four years' service, most of the time being spent in the East, where he met individuals in the condition he is now in.

He remained in perfect health and worked as a fisherman until 1899, when as the result of exposure he was laid up for several weeks, having whitlows while convalescent. But a diagnosis of leprosy was not made until he was admitted to hospital in August, 1903, twenty-one years since he had seen a case of leprosy.

T. P. B.

"Lancet-Clinic," Cincinnati, April 29, 1905.

Piroplasmosis Hominis. By P. M. Ashburn.

The paper by Ashburn gives an account of one case of "Spotted Fever" reported in the Bitter Root Valley and in the vicinity of Missoula Montana during the year 1904.

THE

Journal of Tropical Medicine

SELECTIONS

FROM

COLONIAL MEDICAL REPORTS.

JUNE 15, 1905.

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Colonial Medical Reports—No. 9—British Guiana—(*continued*).

Deaths.

The subjoined table shows number, causes, &c., of deaths in the hospital.

No.	Initials	Sex	Age	Date of admission	Date of death	Days in hospital	Cause of death	Remarks
1	A. M.	F.	40	May 24	June 2	9	Pneumonia	In stage of desiccation.
2	J. H.	M.	61	June 15	June 25	10	Confluent smallpox ..	Haemorrhagic?
3	S. M.	F.	11 days	July 4	July 11	7	(Marasamus and) confluent smallpox.	
4	A. G.	M.	23 days	July 18	July 24	6	Confluent smallpox ..	Malignant form of disease.
5	H. D.	M.	1 day	Aug. 22	Aug. 23	1	Prematurity	Mother with smallpox.
6	R. D.	F.	30 days	Aug. 25	Aug. 30	5	Confluent smallpox ..	Malignant.
7	S. L.	F.	23	Aug. 25	Sept. 4	10	Acute general tuberculosis	Convalescent conf. smallpox
8	D. C.	M	4	Aug. 7	Sept. 7	31	Malarial coma	Pernicious malaria.
9	R. S.	M.	70	Aug. 14	Sept. 17	34	Senile dementia and diarrhœa.	In stage of desiccation.
10	B. R.	F.	18 days	Oct. 14	Oct. 20	6	Marasmus	Infantile atrophy.
11	M. C.	F.	36	Oct. 2	Oct. 22	20	Confluent smallpox ..	Phagedæna of breast.
12	T. B.	M.	15 days	Oct. 19	Oct. 25	5	Confluent smallpox ..	Malignant.

With the exception of No. 10, all the deaths are attributable, either directly or indirectly, to smallpox. The infants, coloured and one white, turned almost black before they died, and the disease in them was of a very malignant form. The case of tuberculosis ran a very rapid course. According to McCombie, this disease occasionally develops during convalescence from smallpox.

No. 9 was an old vagrant in the stage of senile decay and cerebral softening, with smallpox grafted on an already feeble body.

No. 5, a premature child, but showed no external sign of disease, although the mother suffered severely. No. 1 I attribute to septic pneumonia from pustules in the throat.

The mortality on 1,434 would be ·90 per cent., and on 1,330, ·83 per cent., exceedingly low undoubtedly, but not unrecorded in the literature of epidemics.

But if the mortality is low, the suffering, on the other hand, has been so great that only those who have come into immediate contact with the unfortunate victims can realise it. Hancock, writing on a recent epidemic of smallpox in Iowa, returns the mortality at *about* 1 per cent. Bracken, discussing a "peculiar mild form of smallpox," which appeared in various parts of America, states the striking fact that the total mortality was only a little over 2 per cent., and indeed in some localities without fatal cases. Further, the variation in mortality is well shown in the "American Year-Book of Medicine" (1903), in which the *mean death-rate* from 1880 to 1899 in various countries works out as follows:—

Death-rate per Million.

Germany	Mean	1·8 per million.
Scotland	,,	5·3 ,,
Ireland	,,	9·0 ,,
Sweden	,,	9·3 ,,
Switzerland	,,	22·6 ,,
Holland	,,	24·2 ,,
England	,,	33·8 ,,
Italy	,,	179· ,,
Japan	,,	201·0 ,,
Belgium	,,	206· ,,
Austria	,,	358· ,,
India	,,	175· ,,
Hungary	,,	516· ,,
Spain	,,	605· ,,

The following table shows the number of admissions during the period April, 1903, to February, 1904. From this it will be seen that these were highest in July, and that the months of June, July, August and September account for the bulk of the patients:—

1903.	April	56
	May	151
	June	234
	July	341
	August	312
	September	168
	October	118
	November	40
	December	7
1904.	January	5
	February	2

Concluding Observations.

Pitting was noted in all cases of confluent smallpox and a fair number of discrete. Generally speaking, the pits were *irregular* though well-marked and permanent depressions, and not as typical as the regular foveated cicatrices observed in white skins. I have noticed the same condition in East Indian immigrants. So also it was noticed that depigmentation of the cicatrices about the face was almost *nil* or slight, as compared with white skins. Very little change of colour in black skins could be observed as the papules gradually became pustules. Although in the face typical pits were not common, on the body, on the other hand, notably the limbs, there were several cases of resulting foveated but very shallow cicatrices with absence of pigment.

On Face only.

Elevations.—In a small proportion of cases, confluent and discrete, instead of depressions, marked elevations remained with the falling off of the crusts. I had several opportunities of watching their course, which was in brief this: A thin scab would form on each; after a time it would come off; the process would repeat itself for some weeks and then, after a variable period, the elevations would reach the level of the skin and later would become actual depressions. Trousseau, in his "Clinical Medicine," describes the same appearances.

Blood Examinations.

Leucocytosis.—Although I had not the means of adequate knowledge for carrying out a thorough examination of blood *counts*—still from the little I know it was clear that there was a marked leucocytosis, especially of the mononuclear elements. There was marked increase in the small lymphocytes as far as I could see from the examination of ordinary blood films. As I believe the same appearances are to be seen in chicken-pox, this would be of little avail from a diagnostic point of view. The polymorphonuclear neutrophiles which generally are abundantly found appeared to be much diminished in numbers per film.

Anæmia was not noted as *a leading* symptom, so that blood destruction, either quantitatively or qualitatively, could not have been so marked as might have been expected in an epidemic which in its clinical and external manifestations gave the impression of being severe. As a rule, convalescence, once established, was rapid and complete.

Peeling.—In many cases the palms and soles where the pustules were confluent were cast *en masse*, in some cases the exfoliation being over one-eighth inch thick. The under-surface of the cast skin showed the result of the pustules in the form of a perfect honeycomb, except that the pattern was circular instead of being angular. In these cases the new skin was so tender that for some time the unlucky patients could scarcely walk.

I have the honour to be, Sir,
Your obedient servant,
J. Teixeira, G.M.O.

The Hon. the Surgeon-General.

Annual Report of the Government Veterinary Surgeon for the Year 1903-1904.

Georgetown,
May 28, 1904.

Sir,—I have the honour to submit the following annual report for the year 1903-04 :—

During the year 1903-04 epidemics of contagious and infectious diseases were not so frequent as in the year 1902-03. I attribute this not only to the measures enforced under the Contagious Diseases (Animals) Ordinance, but also to the fact that many of the uneducated class, who are owners of stock, are beginning to realise the necessity of quarantine restrictions, &c. In one or two instances they have reported the cases to me themselves, a proceeding unheard of when I first entered upon my duties. I always endeavour to make the owner understand why quarantine restrictions are enforced, the absolute necessity of them, and try to get him to imagine himself in the position of a man whose stock became infected through allowing diseased animals to be at large. Furthermore, I point out how it becomes very much cheaper for him to have his place under the charge of a veterinary surgeon, whose duty it is to make efforts to eradicate the disease, at little or no expense to the owner, whereas unscrupulous persons may be employed to attend to the animals, and try to cure glanders, farcy, &c. These are diseases for which the greatest authorities in veterinary medicine have failed to find a remedy. If mineral tonics are administered they abate the disease for a time, but during that time there is a risk of the contagion spreading to other animals, necessitating their destruction. Had a veterinary surgeon been called in at first such needless loss would have been avoided.

Glanders.

In British Guiana, I am pleased to say, cases of glanders are becoming fewer. In England, reports for 1902 and 1903 show a decided increase. The immunity from the disease enjoyed here speaks very highly for the contagious Diseases (Animals) Ordinance, and proves the need for the restrictions we have adopted. By the statistics of cases of glanders in England we see that in 1882 the total number reported was 1,389, while in 1903 the total number reported was 2,490, or nearly double. During the year 1892 there were 3,001 cases of glanders in England. This, I believe, was due to an epidemic of influenza which prevailed. When we remember how the acute febrile disease has the effect of developing latent glanders, and thus converting non-infective into actively infective animals, there seems reason to connect the prevalence of influenza with the rise in the number of horses attacked in 1892.

Seasons.

During the hot months of the year glanders is most prevalent, but of course in tropical countries this is not so noticeable. The explanation I offer of this fluctuation is that the hot months are more exhaustive, and that fatigue causes premature development of the disease, which might otherwise have continued latent in its pulmonary form. I assume that all visible cases of glanders have previously suffered from nodules in the lungs for at least two or three, and possibly for twelve, months. I know that a febrile condition, especially when accompanied by pulmonary congestion, frequently determines generalisations of the disease, and then the clinical symptoms appear. In Canada the summer and autumn seasons are those in which the favourable conditions for the inhibition of glanders prevail.

Methods of Spread.

Glanders is spread from horses suffering from a discharge, by means of pails, mangers, nose-bags, water-troughs, &c., or any other intermediate bearer of the active virus.

It is a disputed theory as to whether the disease can be spread by germs floating in the air, but when we consider that dried pus-cells float in the air there is ground to believe that the contagion can be carried in this way from one animal to another. Yet, on the other hand, we must not lose sight of the fact that grooms spend ten and twelve hours a day in infected stables without becoming inoculated. It is said that the floating-germ theory was invented to account for the fact that in an infected stud cases are found in various parts of the stable. This circumstance is more easily explained by contagion from nose-bags, mangers, and pails, and by the constant shifting of horses from one part of the stud to another.

The mysterious horse, showing no signs of disease, that works and eats month after month, whilst horses alongside are infected and destroyed by contagion from it, is an ancient, crusted legend. It dates back from the days when glanders without a nasal ulcer was not acknowledged, and when an enlarged gland, a chronic cough, or an intermittent nasal discharge were not considered symptoms of glanders. It has fallen to my lot to investigate numerous outbreaks of glanders, and rarely have I not been able to find three or four horses showing clinical symptoms which had been overlooked by the owners and attendants. I venture to assert that the horse showing no signs of glanders is a non-infective animal, even though his lungs be studded with nodules. Such a horse, though non-infective, is dangerous, because he may develop clinical symptoms very suddenly, and among them may be one accompanied by an escape of active bacilli.

The spread from stable to stable takes place from the introduction of infected horses which have not developed visible signs of disease, but which subsequently become clinically diseased and infective.

Causes.

Glanders arises only by the introduction into the system of the *Bacillus mallei*, which is found in the discharges from the nostrils, farcy buds, infected glands, and nodules of the lungs.

The bacillus is destroyed when exposed to direct sunlight. It may remain active in clean water for many days. It is destroyed by thorough desiccation, and probably lives nowhere out of the animal body or a bacteriological laboratory for more than three months. It is easily destroyed by the more active disinfectants.

Diagnosis.

Some time ago the diagnosis of some cases of glanders was very difficult, but since the introduction of mallein we need have no difficulty, as an injection will, in 98 per cent. of cases, determine the nature of the disease in twenty-four hours.

Every nasal discharge should be treated with caution until its nature is evident. An unilateral discharge, or a discharge that continues without odour, especially when the appetite remains good, should be considered suspicious. Other aids to diagnosis are: the microscope, cultures on selected media, inoculation of small animals, and Widal's agglutinating test. Some of these are only of value in the hands of an expert bacteriologist. Others require days for their development. Mallein is more trustworthy, more simple, and much quicker. Every *post mortem* that I have performed after the reaction of mallein has revealed typical glanders. Several discussions have taken place lately as to the efficacy of this diagnostic agent, but nothing has been adduced to disprove its value.

Control.

It is only by strict legislation that glanders can be stamped out, and legislation such as ours is what is required.

Anthrax.

There has only been one sporadic case of anthrax throughout the whole year. This is striking testimony for the inoculation theory, a theory the soundness of which has been demonstrated twenty years ago. Being new, some of the inhabitants of this colony were at first reluctant to adopt it. I am not over anxious to adopt new methods, and wait until their usefulness has been well established before urging their acceptance here. Inoculation against anthrax has reduced the mortality in France from 20 per cent. to $\frac{1}{4}$ per cent. which, I think, is of itself sufficient proof of its reliability.

Anthrax is a most serious disease. Not only does it affect the lower animals, usually fatally, but it is also capable of communication to the human subject. Therefore, anyone who knows, or has reason to suspect, that anthrax is on his estate or premises should not think twice about reporting it. If he fails to notify the presence of the disease it is not too much to say that he may be responsible for the loss of many human lives. It is too grave a matter to be trifled with, and some idea of its virulence can be formed by stating that in the year 1617 over 60,000 persons died in the vicinity of Naples from consuming the flesh of animals affected by this complaint.

Cerebro-spinal Meningitis.

In 1903 there was the sporadic form of cerebro-spinal meningitis among the mules at Plu. Hampton Court. The loss on the estate was considerable.

Board of Agricultural.

The sanitary condition of the Government stock is at present all that could be desired. During the year several epidemics broke out among the fowls, which were speedily eradicated. In February, the shorthorn bull suffered from an attack of congestion of the liver. He has now completely recovered.

John Raleigh,
Government Veterinary Surgeon.

The Hon. the Surgeon-General.

No. 10.—GRENADA.

Annual Reports of District Medical Officers, 1903.

Medical Report of No. 1. District for the Year 1903.

By G. W. Paterson.
Medical Officer and Health Officer.

The health of the district has been good on the whole. There was a slight epidemic of chicken-pox during the second quarter of the year, and a more severe one of whooping-cough about the same time, which was responsible for some deaths among children. Three cases of typhoid fever came under treatment; unfortunately one ended fatally.

"Eruptive Fever."

The subject of chief interest during the year was the introduction into the district of the "eruptive fever" from Trinidad. The first case was that of a woman, who arrived here on April 5th and immediately developed symptoms pointing to the invasion of the disease; she subsequently infected five others. The disease further effected an entrance on three other occasions, but owing to the experience gained in the first case, as soon as a diagnosis was made, they were isolated and the infection did not spread. An isolation station was established at the Ballast Ground, to which were sent all cases developing the disease; such cases in the first instance came from the town and from St. John's and St. Mark's, and subsequently from the shipping after quarantine had been imposed against Trinidad. Fifteen cases in all were treated at the isolation station. There were no deaths. The station was occupied from April 19th to July 21st, and the average stay of each case was 28·92 days, excluding one convalescent case from a vessel riding at quarantine, which was admitted for eleven days after all the others had already been discharged.

No case was discharged till desquamation, was complete. The average duration of the disease, reckoning from the initial symptoms of the invasion till the completion of desquamation was found to be 34·57 days.

There have been marked divergent opinions among medical men in the West Indies as to the exact nature of this disease, which has given rise to a good deal of discussion generally, some of a very polemic character; but the opinion gained ground with experience that it was variola characterised by the mild nature of the disease; in this view, accepted by the majority of medical men, I concur.

It would be of interest to record the characteristics of the disease as observed here. It was communicable, as demonstrated by the first case introduced conveying the disease to certain inmates of the house. In four cases it developed within fifteen days of contagion, so its incubation period can be placed at some time within that limit, probably fourteen days. The invasion was marked by general malaise, fever and headache, the temperature being generally 101° F.; the presence of backache was not marked; these symptoms lasted for three days, when the rash appeared and the temperature dropped.

The eruption was general, appeared first on the forehead and face, where it was at times very abundant, then on the arms, and during the following days spread over the body, the palms of the hands and the soles of the feet being the last to be affected; its presence in the soles sometimes rendered walking painful for a few days—this occurred about the ninth day—the mucous membrane of the mouth and nostrils was sometimes affected. It did not come out in successive crops on the same part of the body, but merely developed in different localities as it made its appearance. The rash consisted of hard papules which slowly enlarged for three or four days and then became partially vesicular at the apex, while the rest of the papule remained hard and prominent; by the sixth day of the eruption the contents of this vesico-papule presented a yellowish appearance like wax, then the pellicle ruptured and there was only a small amount of secretion inside the vesicle—about this time there might be a slight return of febrile symptoms, with perhaps sore throat or conjunctivitis—soon the vesicular apex became brushed off and a distinct tubercle was left. About the ninth day of the eruption pigmentation began to appear. This was a marked characteristic of the disease, till finally were seen tubercles or macules, paler in their centres than the surrounding skin of the patient, with a very dark areola of pigmentation around their bases. As time went on these tubercles became less prominent and both they and the macules contracted, gradually losing their pale centres, while the pigmentation remained and gave an appearance eventually as if ink had been dashed on the part. This black pigmentation occurred in patients with a black skin; the pigment varied in intensity according to the colouring of the skin, in light skins it would be brown.

There was little or no proper pitting, a roughened condition of skin remained from slight prominences of the tubercles and pin-point holes in the skin. This description applied chiefly to the eruption on the face; on the body and extremities the papules passed into better formed vesicles and finally approached nearer in appearance to a pustule, then gradually dried up and when the pellicles fell off a distinct elevation, not a proper tubercle, or a macule, was left. There was no marked umbilication and no crusts were formed, but fringes of skin, remnants of the old vesicles, gradually separated; this process continued on the average up to the thirty-fourth day of the disease, when the patient was considered free from infection.

From the description given it will be seen that the disease differed from chicken-pox in the character and course of the eruption—the hard papules lying at a deep level of the skin, and vesiculating late and partially only with the resulting tubercles in places; not the characteristic pearly, glassy vesicle of varicella. It differed, again, in the abundance of the rash on the face and in its marked prevalence in the palms and soles and in the length of time the disease took to subside.

From typical smallpox it differed in the great essential that the constitutional symptoms were exceedingly mild in proportion to the amount of rash present—some of these cases had the face and body literally covered with a rash as described above, and yet on the eighth or ninth day, apart from some malaise, were quite cheerful and strong—it differed, again, in the absence of an offensive odour, the absence of crust formation and proper pitting, the absence of marked umbilication and complete pustulation.

The relationship, however, of vaccination to the disease was marked, as will be seen by two sets of experiments: I., dealing with the effect of vaccination in preventing the disease, and II., the failure of vaccination on those who had recently suffered from the disease.

I.—Of eleven inmates of a house, one contracted the disease in Trinidad which developed after returning home. Three submitted to vaccination,

which was successful, and did not contract the disease. One had suffered from smallpox in infancy and did not contract the disease (vaccination subsequently failed in this case). Four would not submit to vaccination and contracted the disease. The remaining two were men, not vaccinated, but who had little to do with the house and did not contract the disease.

II.—Fourteen cases who had suffered from the disease were vaccinated during convalescence and some again subsequently, and in only one case was there a vaccine vesicle produced.

The means adopted for stamping out the disease were as follows:—

(1) Observation of passengers arriving from Trinidad for fourteen days; then later on imposition of—

(2) Quarantine for sixteen days of vessels with crew and passengers from the same port.

Medical Report of No. 2 District for the Year 1903.

By P. F. Macleod.

Richmond Hill,
February 26, 1904.

Besides the facts mentioned in the monthly reports there is nothing of interest to add to this report.

Sanitary Conditions.

The sanitary condition of the district is exactly as it has been for years, no improvement has taken place in the manner in which the people live. No attention is paid to sanitation neither in dwellings nor their surroundings, conditions that to the intelligent mind should be pregnant factors in causing and disseminating disease. Yet the health of the inhabitants does not appear to be much affected thereby.

[illegible] an epidemic form, and the only need be made of was an unusual nfantile diarrhœa in the months

his class was considerably above months. Meteorological con- ing, and exposure I regard as the causation.

Vater Supply.

er supply in the lower parts of er that should receive the con- vernment. The inhabitants are n pond-water during the wet months have to travel miles to y article of life, and then it is e that is liable to contamination. r vaccination were fairly regular

aws came under observation.

OF No. 3 District for the Year 1903.

N. S. Durrant.

Morne Gay,
January 30, 1904.

3 District during 1903 was good. the year the alarm occasioned by case stated to be one of varioloid rge's caused extra efforts to be ople vaccinated. In this district ult population was in vain. All infected places were examined ht, but no case, fortunately,

f the year whooping-cough broke e of chicken-pox or measles when number of years, only stops when district has had the specific

number of new board cottages e prosperous.

vacation leave from April 24th 03.

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"ERUPTIVE FEVER."

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which was successful, and did not contract the disease. One had suffered from smallpox in infancy and did not contract the disease (vaccination subsequently failed in this case). Four would not submit to vaccination and contracted the disease. The remaining two were men, not vaccinated, but who had little to do with the house and did not contract the disease.

II.—Fourteen cases who had suffered from the disease were vaccinated during convalescence and some again subsequently, and in only one case was there a vaccine vesicle produced.

The means adopted for stamping out the disease were as follows:—

(1) Observation of passengers arriving from Trinidad for fourteen days; then later on imposition of—

(2) Quarantine for sixteen days of vessels with crew and passengers from the same port.

(3) Isolation of cases suffering from the disease at an isolation station.

(4) Disinfection (*a*) of vessels with cargo and clothing and bedding of crew and passengers, (*b*) of dwellings in which the disease occurred.

(5) Vaccination or revaccination of contacts.

As a case under observation developed the disease it was sent to the isolation station, all contacts vaccinated and the building disinfected; these contacts would then have to present themselves for inspection daily for sixteen days. At the termination of the quarantine period, if all were well on board, the vessel would be discharged after disinfection; but if a case had occurred it would be transferred to the isolation station, and the vessel would have to ride out a further period of quarantine; this took place on three occasions. While at the isolation station the following local treatment of cases was carried out: the body would be sponged with creolin lotion and then smeared over with boracic or creolin ointment, and each case would be given an antiseptic bath of perchloride of mercury before discharge. The disinfectants used were sulphur for fumigating purposes and perchloride of mercury in solution for disinfecting soiled clothing and bedding.

Quarantine.

During the year quarantine regulations were imposed against Trinidad and Demerara, and that in existence against Barbados when the year began was taken off on May 18th.

The quarantine station was not occupied during the year.

One hundred and forty-nine Bills of Health were issued.

Medical Relief.

The total number of attendances on all classes under the Medical Relief System amounted to 2,773 for the year.

The number of vaccinations successfully performed were 215—several prosecutions had to be undertaken under the Vaccination Ordinance.

The number of deaths certified were 98.

There was one inquest and two *post-mortem* examinations of dead bodies.

Medical Report of No. 2 District for the Year 1903.

By P. F. Macleod.

Richmond Hill,
February 26, 1904.

Besides the facts mentioned in the monthly reports there is nothing of interest to add to this report.

Sanitary Conditions.

The sanitary condition of the district is exactly as it has been for years, no improvement has taken place in the manner in which the people live. No attention is paid to sanitation neither in dwellings nor their surroundings, conditions that to the intelligent mind should be pregnant factors in causing and disseminating disease. Yet the health of the inhabitants does not appear to be much affected thereby.

No disease assumed an epidemic form, and the only disease that mention need be made of was an unusual number of cases of infantile diarrhœa in the months of July and August.

The death-rate in this class was considerably above the normal in these months. Meteorological conditions, improper feeding, and exposure I regard as the principal factors as a causation.

Water Supply.

The want of a water supply in the lower parts of the district is a matter that should receive the consideration of the Government. The inhabitants are entirely dependent on pond-water during the wet season, and in the dry months have to travel miles to secure this necessary article of life, and then it is procured from a source that is liable to contamination.

The attendances for vaccination were fairly regular throughout the year.

Very few cases of yaws came under observation.

Medical Report of No. 3 District for the Year 1903.

By N. S. Durrant.

Morne Gay,
January 30, 1904.

The health of No. 3 District during 1903 was good. In the early part of the year the alarm occasioned by the appearance of a case stated to be one of varioloid varicella in St. George's caused extra efforts to be made to get the people vaccinated. In this district the appeal to the adult population was in vain. All persons coming from infected places were examined daily for a fortnight, but no case, fortunately, developed.

Towards the end of the year whooping-cough broke out, and, as in the case of chicken-pox or measles when it reappears after a number of years, only stops when every child in the district has had the specific complaint.

Judging by the number of new board cottages erected the people are prosperous.

I was absent on vacation leave from April 24th to October 29th, 1903.

The details of the work performed during the six months are:—

Vaccinations	253
Free medical and surgical attendances	512
Labourers attended under Government scale of fees	584
Death certificates	37

Medical Report of No. 4 District for the Year 1903.

By R. D. O'Neale.

Gouyave,
February 15, 1904.

The general health of the district was fairly satisfactory during the whole year, with the exception of the diseases as mentioned below.

Malaria fever was very prevalent, it being entirely absent from the district for only two and a half months, March, April, and half of May. The most severe and greatest number of cases occurred during the month of October. The disease is accountable for fourteen of the certified deaths.

Whooping-cough.—During the year a severe epidemic of whooping-cough disturbed the health of the children; commencing in June, it did not completely disappear until the month of December, and then only from the want of fresh subjects to attack. Although the number of cases attended was large, and the type of the malady, especially at the commencement of the epidemic, severe, the deaths recorded from such a fatal infantile disease were comparatively small, the total number being only seventeen.

Dysentery.—A good many cases of dysentery were attended, but this disease did not during any month of the year assume any epidemic form. The greatest number of cases were attended during the month of October, and the cause and origin of the disease appears in the majority of cases to have been malarial.

Sanitary Condition.—There is nothing of importance to report in the sanitary condition of the rural portion of the district; the condition of the roads leading to some of these villages has already been pointed out by me in my monthly reports, and is worthy of attention.

The sanitary condition of Gouyave may be said to be fairly satisfactory. Although a good deal has been done by the Sanitary and Town Boards with respect to the abatement of nuisances and cleaning of the town, the drainage of the Duncan's Town portion is in much the same condition as pointed out by me in my annual report of 1899, doubtless the carrying out of a proper and efficient system being prevented by the heavy cost it would entail.

Water Supply.—The proposed new water supply to Gouyave will undoubtedly prove a great boon to the inhabitants. A better supply than the present one has been a long-felt necessity.

Vaccination.—Under the head Vaccination the attendance was very satisfactory, 308 successful vaccinations being performed; compared with the previous records of four years this is the largest number performed in any year. The Chaumier's lymph gave most satisfactory results.

Medical Report of No. 5 District for the Year 1903.

By H. Bishop.

St. Patrick's,
February 2, 1904.

Malaria.—The endemic disease malaria formed a large percentage of the cases that came under observation, particularly during the latter half of the year. The disease was not confined to the more swampy localities, but was met with, though less frequently, in the hilly parts of the district. The type was usually the mild quotidian, for which, unless the attack was unduly prolonged, the patient did not as a rule seek medical treatment. Chronic invalidism with organic disease, the result of old-standing malaria, was also frequently met with.

Improper feeding and intestinal parasites were largely responsible for the gastro-enteric disorders so frequently met with among children.

Dysentery.—During the month of August a few cases of dysentery of a mild type were seen. In October the disease again appeared, and there was a steady increase in the number of cases during November, when it threatened to become epidemic. At the end of the year there were still a few cases under treatment. The disease was confined to the St. Patrick's portion of the district. In the more educated classes, where instructions as to diet, which forms a very important element in the treatment of these cases, were faithfully carried out the disease never proved fatal. Among the less educated, either from ignorance or inability to carry out the necessary measures, the number of deaths were quite out of proportion to the mildness of the disease. Children and the aged suffered most severely.

Whooping-cough.—Almost all the children in the district under five years of age suffered from the epidemic of whooping-cough which prevailed during the last seven months of the year. The epidemic *per se* did not cause many deaths, but where concurrent gastro-enteric disorders were associated with it, it certainly aided in bringing about a fatal termination.

Eruptive Fever.—One case of "eruptive fever" occurred at Bonair, St. Mark's. The patient was transferred to the isolation station at St. George's, and vigorous measures were adopted to prevent the spread of the disease. These, happily, proved successful.

Yaws.—The disease "yaws" was only by accident encountered. Those affected never seek medical treatment, the popular idea being that doctors' medicine "cures" the disease too rapidly only to cause it to break out afresh with renewed vigour at a later date.

Consumption.—Consumption was more frequently met with than the climatic conditions would lead one to expect. This in some measure can be accounted

for by the housing of the poorer classes, which in some instances is deplorably inadequate. Small, dark, ill-ventilated, one-roomed huts provide shelter for large families; a condition the reverse of hygienic.

During the first half of the year the health of the district may be said to have been very fair, and if taken as representing the normal standard would make that of the second half, when an epidemic of whooping-cough was raging and dysentery and malarial were unduly prevalent, fall far below that standard.

Sanitary Condition.—The primitive hygienic conditions which obtain in the district, I take it, have always existed, and where the population is scattered did not tend to affect to any appreciable extent the public health. These conditions, however, fall far short of the requirements of towns.

The street gutters of the town of Victoria were not kept in a satisfactory condition during the year. It would seem to require the services of at least two men, constantly employed, to cleanse and maintain them in a sanitary condition. The present arrangement is altogether inadequate.

Water Supply.—The town of Sauteurs has suffered in health from the want of a supply of wholesome water and from its proximity to swampy ground, and in the simple unambitious programme for the gradual improvement of the sanitary conditions of the colony by the reclamation of swampy land it, a large and important centre of population, flanked on either side by swampy ground, has a just claim to prior consideration.

Burials.—Burials were frequent in those places removed from the regular burial grounds. From the Duquesne Valley the dead were never taken to the burial grounds, but interred in the cocoa cultivations there, perhaps in dangerous proximity to houses or water supplies, or at an insufficient depth; no supervision being possible in those cases to ensure a proper burial.

The number of prescriptions issued under the Medical Relief Scheme were:—

Paupers	185
Children under 10 years	817
Labourers over 60 years	86
Police and prisoners	25
Labourers under scale of charges ...	1,213
Total attendances ...	2,326
Number of inquests attended ...	4
,, successful vaccinations ...	270

The lymph supplied gave uniformly good results.

Medical Report for No. 6 District.

By W. A. D. Whiteman.

St. Patrick's,
February 25, 1904.

Sir,—I have the honour to submit my report on No. 6 Medical District for the year 1903. Having, however, only been transferred to this district on April 20th last, I am only able to deal with the last seven months of the year.

Health.

During the period under review the health of the district must be characterised as having been exceedingly bad, and the figures below show the enormous amount of work entailed in consequence.

Eruptive Fever.—On April 20th the police reported a case of this disease at River Sallie, which on examination proved only too true. In consequence of this discovery an isolation station was promptly established just outside the village in the River Sallie old house, and this case, together with three others which subsequently occurred, was there isolated and successfully treated. Having already expressed my opinion as to the nature of the disease in a special report on the subject, and given details as to the measures adopted to prevent its spread in my monthly reports, I will now only express my conviction that in dealing with a similar threatened invasion at any future time the rules and regulations drawn up by the General Board of Health might with advantage be modified to some extent. I am of opinion that one large isolation station should be established in St. George's to which all the earlier cases occurring in the districts should be sent, and only when the disease assumes epidemic dimensions should an attempt be made to establish district isolation stations. I make this suggestion knowing the difficulties attendant on securing suitable buildings for isolation stations, and even when these are secured the further difficulties of complete isolation among so ignorant and unreasonable a populace. With incomplete isolation each district station becomes a huge centre of infection and the danger to public health correspondingly great.

Whooping-cough.—An epidemic of this disease prevailed during the whole seven months under review, and played havoc among the children. Even now, at the date of this report, there are still some cases under observation.

Dysentery.—This disease made its appearance towards the end of June, and spreading slowly but surely, continued up to the close of the year. It started in the lowlands where the water supply is of the worst, and though after a time it became general in its distribution, I cannot modify my previously expressed opinion that the cause of these outbreaks is the impure water supply in certain localities, and under certain conditions the disease must necessarily be a regular annual visitor. That its spread becomes more or less general after a time admits of ready explanation, and does not in any way detract from the value of the theory which I venture to advance.

Malarial Fevers.—During the months of July, August and September various types of malaria were prevalent throughout the district, and several cases of typho-malaria occurred in the higher lands where the water supply is from springs pregnant with decomposing vegetable matter.

Yaws.—This loathsome disease is as prevalent as ever, and yet there are but few applications for treatment, it being accepted by the labouring classes as an unavoidable evil.

Venereal diseases appear to be steadily on the increase, syphilis occupying a very prominent position,

yet it is wonderful to note the want of appreciation of the gravity of the disease on the part of victims.

Sanitation.

As in other districts so in this, the sanitary measures adopted are of the most primitive, there being an utter disregard of the most elementary principles of hygiene. It is, therefore, not surprising that so much sickness prevails, and we can only attribute our freedom from severe epidemics of infectious diseases to Providential protection.

Infant Mortality.—Again, the infant mortality is exceptionally high, due entirely to the want of proper food and care; and in this connection I must draw attention to the undoubted degeneration of the rising generation, a fact that must be patent to the most casual observer, and one of serious import to the future welfare of the Colony.

Burials.—I must once more draw attention to the danger to public health arising from the indiscriminate manner in which the dead are buried. The time is now ripe for legislation on this subject, and even more so for the provision of public cemeteries within reasonable access of the different centres of population. At the present time there are but two in the whole parish of St. Patrick, both situated within the town of Sauteurs, and respectively under the complete control of the officiating ministers of the two predominant religious denominations. Such a state of affairs needs no comment, and no blame could be attached to an ignorant populace for gross errors committed in this direction.

Water Supply.—Water is plentiful throughout the district, but with few exceptions is unfit for human consumption.

Vaccinations.—One hundred and seventy-four vaccinations were performed during the seven months, a result due in the main to the excellent quality of the lymph supplied, and also to the eruptive fever scare and prosecutions for non-compliance with the vaccination ordinance.

The attendances under the Medical Relief Scheme (for the seven months) were as follows:—

Free—Labourers' children	1,797	
Paupers and labourers over 60	687	
Police and prisoners	11	2,495
Payment tickets		943
Deferred payment tickets		469
Total ...		3,907
Vaccinations		174
Deaths certified		133
Grand total ...		4,214

Medical Report for No. 7 District for the Year 1903.

By Edwin F. Hatton.

Grand Bras, St. Andrew's,
January 25, 1904.

Sanitary Condition.—The conditions of the rural part of the district offer very little scope for a sanitary report, as there are no public places, except the roads. The drains along many of these roads contain stagnant water throughout the wet season, and form breeding pools for Anopheles mosquitoes. When these pools are near dwelling houses they are certainly a source of danger in spreading malaria.

Water Supply.—The streams and rivulets from which the poorer classes take their water supply, are also a source of danger in spreading dysentery and typhoid. These streams are constantly polluted by manure and other refuse, which have been thrown under the cocoa, being washed into them, and by the washing of clothes in them.

Overcrowding and absence of light and ventilation in bedrooms, with no conveniences for the disposal of excreta, is the rule in the dwelling houses of the labourer and small peasant proprietors.

With regard to the town of Grenville, I can add nothing to my report of last year. There has been no improvement in the sanitary condition of the town. The local health authority tried to compel the town board to make some better arrangement for the cleaning of fish at the Fish Market, but met with little success, the legal procedure proving too cumbersome. After an unsuccessful prosecution in the police court, the town board did make some slight improvement in the scavenging around the Fish Market, but this is still far from satisfactory.

Vaccination.—Vaccination received a stimulus by the presence of smallpox in some of the neighbouring islands, and some four hundred persons were vaccinated in this district.

Smallpox.—On May 4th a man was found in Paraclete suffering from a mild and abortive form of smallpox. He and the other inmates of his house were isolated. This was done under a regulation of the Board of Health declaring "eruptive fever" to be an infectious disease.

This man had recently come from Carriacou where "eruptive fever" was prevalent.

Recent vaccination seems to have protected the other inmates, *i.e.*, his wife and three young children, as no other case occurred. On June 4th, after burning bedding and clothing, and fumigating the house, he was set free.

Whooping-cough.—Whooping-cough was epidemic in the first half of the year. Dysentery prevailed more or less throughout the year, and malaria during the second half.

Enteric Fever.—A few cases of fever of a typhoid type were seen at the end of the year.

Return of duties performed by the Medical Officer of District No. 7 during the year ended December 31st, 1903:—

Number of prescriptions issued—	
Free	1 624
Payment	1,579
Number of attendances on cases:—	
Of Pauper	369
Of Labourers' children under 10 years of age	1,199
Of police constables and prisoners ...	56
Of labourers under scale of charges ...	1,583
Number of deaths certified	153
Number of vaccinations successfully performed	334

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THE

Journal of Tropical Medicine

JUNE 15, 1905.

THE MONETARY VALUE OF LIFE.

AT the Indian Medical Service Dinner on June 8th Lieut.-Colonel Freyer made allusion to the subject of medical men in India not being allowed to accept large fees in return for successful medical treatment of natives of India. This has been a vexed question for some time, and it crops up rather acutely now and again. The rule in British governmental circles is that not only no fee but no present even may be accepted for the public work done, or proposed to be done, by Government officials. Did no such understanding exist, it is easy to conceive that in many ways corruption might creep into public life in connection with various works and undertakings. The extension of this rule, however, to those who are the means of lessening bodily suffering and the cure of disease is stretching the tether to an extent which smacks of prudery. The imposition of an order regulating the amount a man may pay his doctor seems to be either a stage of advanced socialism or of autocratic interference with the subject, which may or may not be for the public good. In India the former cannot be said to obtain, and the latter would seem to be dictated from a high standpoint of benevolent paternity.

The question of medical and especially fees for surgical operations on which life and death actually depends, is a curious anomaly. A surgeon who receives 100 guineas for an operation by which he saves a rich man's life is supposed to be highly paid. Within a few weeks afterwards the same man may spend that sum and more in one evening's entertainment of his friends—a thank-offering for his recovery—to which in all probability the man who saved his life is not invited. The fact is, human life is cheap even amongst the wealthy and high-placed, and judging by the payment of the man who is the instrument in prolonging that life, 100 guineas is about the maximum in this country at which the patient or the patient's friends and relations value his or anyone else's life. In India some of the rulers set a higher value upon their lives, and consider one hundred times 100 guineas not too much to be restored to health. It is a mere question of reward for value given, and a man is the best judge of the value life is to him.

The sum allowed to be received by medical officers in the Indian medical service on the one hand, and the sum offered them by native princes or rich men for having cured them of disease on the other, has caused the resignation in recent years of at least one well-known medical officer. That this should be so may be consonant with discipline, but no such regulation was in existence when that officer joined the Service, otherwise in all probability he, along with many other capable men, would never have been induced to join it. Breach of contract does not hold good in the Services, and men are bound to submit to any rules and regulations which may be imposed; but a breach of contract is neither just nor equitable, however sheltered by autocratic *régime*, and in the long run the injustice tells in the case of every Service, for either good men leave it or refuse to accept office in its ranks.

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THE

Journal of Tropical Medicine

JUNE 15, 1905.

THE MONETARY VALUE OF LIFE.

AT the Indian Medical Service Dinner on June 8th Lieut.-Colonel Freyer made allusion to the subject of medical men in India not being allowed to accept large fees in return for successful medical treatment of natives of India. This has been a vexed question for some time, and it crops up rather acutely now and again. The rule in British governmental circles is that not only no fee but no present even may be accepted for the public work done, or proposed to be done, by Government officials. Did no such understanding exist, it is easy to conceive that in many ways corruption might creep into public life in connection with various works and undertakings. The extension of this rule, however, to those who are the means of lessening bodily suffering and the cure of disease is stretching the tether to an extent which smacks of prudery. The imposition of an order regulating the amount a man may pay his doctor seems to be either a stage of advanced socialism or of autocratic interference with the subject, which may or may not be for the public good. In India the former cannot be said to obtain, and the latter would seem to be dictated from a high standpoint of benevolent paternity.

The question of medical and especially fees for surgical operations on which life and death actually depends, is a curious anomaly. A surgeon who receives 100 guineas for an operation by which he saves a rich man's life is supposed to be highly paid. Within a few weeks afterwards the same man may spend that sum and more in one evening's entertainment of his friends—a thank-offering for his recovery—to which in all probability the man who saved his life is not invited. The fact is, human life is cheap even amongst the wealthy and high-placed, and judging by the payment of the man who is the instrument in prolonging that life, 100 guineas is about the maximum in this country at which the patient or the patient's friends and relations value his or anyone else's life. In India some of the rulers set a higher value upon their lives, and consider one hundred times 100 guineas not too much to be restored to health. It is a mere question of reward for value given, and a man is the best judge of the value life is to him.

The sum allowed to be received by medical officers in the Indian medical service on the one hand, and the sum offered them by native princes or rich men for having cured them of disease on the other, has caused the resignation in recent years of at least one well-known medical officer. That this should be so may be consonant with discipline, but no such regulation was in existence when that officer joined the Service, otherwise in all probability he, along with many other capable men, would never have been induced to join it. Breach of contract does not hold good in the Services, and men are bound to submit to any rules and regulations which may be imposed; but a breach of contract is neither just nor equitable, however sheltered by autocratic *régime*, and in the long run the injustice tells in the case of every Service, for either good men leave it or refuse to accept office in its ranks.

BRITISH MEDICAL ASSOCIATION.

Seventy-third Annual Meeting, Leicester, July 24th, 25th, 26th, 27th and 28th, 1905.

Section M.—TROPICAL DISEASES.

President: RUBERT WILLIAM BOYCE, M.B., F.R.S., London.

Vice-Presidents: ANDREW DUNCAN, M.D., London; FLEMING MANT SANDWITH, M.D., London.

DEAR SIR,—It is hoped that the Section on Tropical Diseases at the forthcoming meeting of the British Medical Association will be well attended, and that all those interested in this branch of medicine will endeavour to be present and will unite to make the meeting successful, both by taking part in the discussions and by contributing papers.

The following subjects have been selected for discussion:—

Wednesday, July 26th.—"Tick Fever."

Thursday, July 27th.—"Sprue and Hill Diarrhœa."

Friday, July 28th.—"Tropical Diseases of the Skin."

The Section will meet at 10 o'clock each day.

The following gentlemen have already promised to take part in the discussions or to contribute papers: Dr. H. E. Annett, Prof. Rubert Boyce, Dr. Anton Breini, Mr. James Cantlie, S. R. Christophers, M.B., I.M.S., Dr. Andrew Duncan, Dr. J. E. Dutton, Sir Patrick Manson, Dr. W. T. Prout, Prof. Ronald Ross, Dr. L. W. Sambon, Dr. F. M. Sandwith, Dr. J. W. W. Stephens, Dr. Wolferstan Thomas, Dr. T. L. Todd.

We shall be obliged if you will let us know at your earliest convenience if you will be able to take part in any of the above discussions, or if you propose to contribute a paper on some subject.

Papers bearing on the discussion or otherwise will be read for gentlemen unable to be in England for the meeting.

The Secretaries will be glad to receive pathological specimens, drawings, photographs, and microscopical preparations for exhibition at the meeting.

We are, Dear Sir,

Your obedient servants,

G. A. CLARKSON, F.R.C.S., *Hon. Sec.*,
11, Southgates, Leicester.

J. H. M. MACLEOD, M.D., *Hon. Sec.*,
11, Harley Street, London.

Regulations for the Conduct of Sections.

(1) Papers at the Sectional Meetings must not occupy more than fifteen minutes in the reading, and no subsequent speech must exceed ten minutes.

(2) Authors are requested to send short abstracts of their papers not later than May 15th.

(3) The text of papers submitted for publication in the *British Medical Journal* as part of the report of the Section should represent what is actually read in the Section.

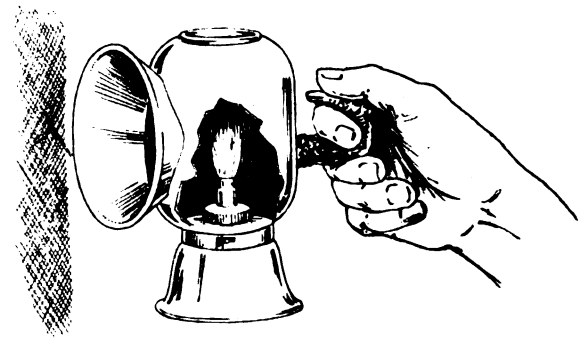
(4) Each author should hand the text of his paper in proper form for publication to one of the Secretaries of the Section immediately after it is read, or at the latest at the end of the day's meeting of the Section. Neglect to comply with this request may result in the omission of the paper in question from the proceedings of the Section published in the *British Medical Journal.*

(5) Papers read are the property of the British Medical Association, and cannot be published elsewhere than in the *British Medical Journal* without special permission.

(6) Authors of papers not read have no claim for the publication of their papers in the *British Medical Journal. Papers cannot be taken as read.* If not read they form no part of the proceedings of the Section.

THE SWATOW MOSQUITO LAMP.

THE value of the Swatow mosquito lamp as a method of destroying mosquitoes is known to Europeans in South China and the Straits Settlements, and has been used by the Chinese for a long period. I am tempted to mention the value of this lamp, in the first place, because I am fully convinced of its efficacy when properly used, and because I have seen a communication addressed to Messrs. Montague, 101, New Bond Street, London, from a high medical authority in India. The communication runs thus:—"With reference to Cantlie's mosquito lamp you sent me, I beg to point out that the lamp in question seems to be a fraud. I lighted it with spirit in several rooms and it did not attract a single mosquito." I am much obliged to Messrs. Montague and to the medical officer in India for having drawn my attention to this failure, as it enables me to state the use to which this



lamp may be really put. The lamp will not *attract* mosquitoes, it will only destroy them when the lamp is *brought to them.* It is chiefly useful *inside* the mosquito net. Supposing one has, on retiring, tucked the mosquito net in all round the mattress, and then discovers that one or more mosquitoes remain inside the net, it is easy to raise the net sufficiently to reach the lamp, if it is conveniently placed by the side of the bed, to light the lamp and to kill the mosquito by placing the large mouth of the lamp over the mosquito, which when thus attacked attempts to escape by the upper opening or chimney. In its passage, however, it is necessarily exposed to the flame of the lamp and burnt. The light of the lamp when thrown on the mosquito seems to paralyse the insect, for, as a rule,

it remains quite stationary until the mouth of the lamp is made to touch the net (or other surface) on which the mosquito may have happened to alight.

The "oil" for the lamp must *not* be spirit nor petroleum, or any other readily inflammable substance, otherwise there is danger of setting fire to the bed. Native oil used for lamps is the best:—rape oil, nut oil, or any vegetable oil used for burning in lamps by natives of warm climates is what is required. I lay no claim that this lamp should be called "Cantlie's," as it is merely the lamp known as the "Swatow," extensively used in South China as a mosquito destroyer, and being convinced of its efficacy, I induced Mr. Montague to make and supply it. It is only necessary to take the lamp on one's travels, as oil of the kind required can be had from the natives of any district.

JAMES CANTLIE.

Abstracts.

ON A PARASITE FOUND IN PERSONS SUFFERING FROM ENLARGEMENT OF THE SPLEEN IN INDIA (THIRD REPORT).

By LIEUT. S. R. CHRISTOPHERS, M.B., I.M.S.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. New Series, No. 15, 1905.

ABSTRACT.

THE DEVELOPMENT UNDERGONE BY THE PARASITE IN CITRATED BLOOD AT A LOW TEMPERATURE.

THE correct zoological position of the parasites described in my previous reports is extremely uncertain. They have been variously classed as Piroplasmata—the view held by Laveran and Mesnil and by Major Donovan, I.M.S.; as Trypanosomata—the view of Major Leishman, R.A.M.C., and of Marchand and Ledingham; as protozoa of an unknown nature—the view first put forward by Major Ross, I.M.S., and later taken up by others; and as the spores of a microsporidian.

Captain Rogers, I.M.S., recently announced that, by adding blood, obtained by splenic puncture from cases of splenomegaly caused by the parasites, to a small quantity of sterile citrate of sodium solution and keeping it at a temperature of 22°C. for two or three days he had succeeded in observing the development of the parasites into trypanosomes.[1]

Observers who had put forward the opinion that the bodies are a stage in the development of a trypanosome looked upon Captain Rogers' discovery as a confirmation of this view of their nature, but it was apparent from an examination of the illustrations attached to his article that the bodies which Captain Rogers regarded as fully-developed trypanosomes differed considerably from ordinary trypanosomes found in animals. They possessed no undulating membrane, the micro-nucleus or centrosome was situated at the end of the parasite from which the flagellum emerged, and the flagellum appeared to pass out of the parasite directly from the micro-nucleus. In a later communication[2] Captain Rogers recognised these differences, and stated definitely that in no instance was an undulating membrane present, nor did the flagellum pass forwards towards the macro-nucleus.

In the main I have been able to confirm Captain Rogers' results. Indeed, most of the forms figured by him, including very elongate forms, have occurred in my preparations. In addition I have been able to observe certain further appearances not described by him, which appear to take place at a later date, and to add some details of description. On the other hand, I have been unable to accept his conclusions regarding conjugation of the large oval forms, or to be convinced that the nature of the bodies is yet finally settled.

Technique.—A 10 per cent. solution of citrate of sodium in distilled water is freshly prepared.

Some time before the operation of spleen puncture is to be carried out, a Burroughs and Wellcome "all-glass" syringe (small size) fitted with a platino-iridium needle is rinsed out with the citrate solution and placed in a test tube with the piston resting upon a pad of wool. About ·5 c.c. of citrate solution is left in the syringe, and the cotton pad is damped with the same. The test-tube is plugged, and the whole sterilised at 120° C. for half an hour in the autoclave.

At the bedside the test-tube is tilted to allow the syringe to fall needle downwards against the plug. The plug is then removed far enough to allow the barrel of the syringe to be seized by the fingers. It is convenient to have three or four prepared syringes at hand, in order to reduce the amount of preparation necessary at the bedside.

Immediately before puncture any excess of fluid is ejected from the syringe, only a little being allowed to remain in the needle and nozzle. A successful puncture should one-third or one-half fill the barrel of the syringe.

Blood from the syringe is ejected with the fullest precautions as to sterility into small sterile tubes. I have found "arsenic tubes" (straight 3″ × $\frac{3}{8}$″) very suitable, their narrowness and length being antagonistic to desiccation and contamination during the frequent examination of the blood. For sterilisation these tubes may be heated to 120° C. in the autoclave, or merely passed through the flame till "browning" of the cotton plug takes place. *No citrate solution is added to the tubes.* After blood has been ejected into the tubes, I have found it convenient to enclose them in a small tin canister containing a little damp wool and provided with a tightly fitting lid.

As I was obliged to use an ordinary ice chest, the cultures were exposed to a somewhat varying temperature, but it did not rise above 24°C.

Blood for examination is removed by means of a platinum loop, great care being taken each time to prevent bacterial contamination. As the tubes employed were long and narrow, it was necessary to use a long, rather thick platinum wire instead of the ordinary loop with a holder.

Before removal of a drop for examination, the blood

[1] *British Medical Journal*, September 17th, 1904, page 648.

[2] *Quarterly Journal of Microscopical Science*, November, 1904.

is shaken up to mix the corpuscles and plasma thoroughly. This enables more satisfactory films to be made as well as ensures parasites being equally distributed. In good preparations the blood corpuscles remain unchanged for fifteen days or more: they cannot be distinguished under the microscope from the corpuscles of freshly drawn blood. The leucocytes show marked degenerative changes, and the nucleus becomes swollen and irregular. Nevertheless, in some cases, the variety of cell could be distinguished easily after several days.

Development.—Development of the bodies was observed in four cases. In one the preparation was examined every few days for a period of thirty-three days, at the end of which time the corpuscles were but little altered and no micro-organisms were seen in the films. The remaining cases, owing to the pressure of other duties, were not followed up so systematically, and in two of the cases commencing changes only, though of a convincing nature, were seen.

Case 1.—The patient had a greatly enlarged spleen reaching across the middle line of the abdomen and an irregular high temperature reaching to 102° F. and 103° F. at night. About ·75 c.c. of blood was removed from the spleen in the manner already described. In films made at the time of puncture parasites were fairly numerous. No clotting occurred, and when shaken up the blood retained for weeks a natural appearance.

Summary of Changes Observed.

There could be no doubt from this case that, under the conditions described by Captain Rogers, profound developmental changes in the bodies had taken place. These appeared to be of the following nature and order of sequence: enlargement together with changes in the large chromatin mass and the protoplasm, proceeding until the bodies are at least as large as a red blood corpuscle; fission occurring at least twice and forming groups of two and four large oval bodies loosely or not at all attached; formation of the vacuolic area and extrusion of the cement substance; flagellation of certain of the bodies, and the formation of numerous fission forms, many of which flagellate; finally, the formation of large groups of closely aggregate forms of various sizes. The time taken in this case for the different stages was as follows: large, fully-developed forms appeared by the fourth day; the vacuole, the extrusion of the cement substance, and the early stages of the flagella formation, all first appeared on the fifth day. Fully-developed flagella were not seen till the sixth day. Elongate flagellate forms were specially numerous on the sixth and seventh days. From the ninth day onwards the formation of masses of pear-shaped and irregular forms was the chief feature. Captain Rogers notes large forms on the second day and flagellate forms on the third day. He does not note any further stages than those seen on the fourth day, which correspond with those obtained by me on the fifth and sixth days.

Case 2.—The patient had a greatly enlarged spleen and an irregular high temperature. About ·25 c.c. of blood was obtained by spleen puncture. Bodies were rather scanty in a film taken at the time of puncture. In this specimen, after subsidence of the corpuscles, a slight clot formed in the plasma.

On the third day no development was noted. On the fifth day some large forms not quite so large as in the fully-developed bodies noted in Case 1 were seen. Most of the bodies had undergone little or no change. On the tenth day a good many quite unaltered bodies were seen, and some large forms at the same stage as those seen on the fifth day. Preparations were not again examined until the twenty-first day, when only one or two undeveloped bodies were noted. In this case development, although started, apparently failed to progress.

Case 3.—The patient had a greatly enlarged spleen and occasional slight rises of temperature. About ·25 c.c. of blood was obtained by splenic puncture. Parasites were fairly numerous in a film taken at the time. On the third day the culture was examined, but only a very few somewhat enlarged bodies were seen. On the tenth day fairly numerous forms with long flagella were seen. In this specimen the bodies were almost entirely free forms; a few groups were, however, present, and four or five bodies were often seen lying close together; a large proportion of the forms possessed flagella four or five times the length of the body of the parasite. The parasites were for the most part of an elongate pear-shaped form, and in many cases the extremity opposite to the flagellum was pointed, whereas the extremity from which the flagellum arose represented the thick end of the pear. In these forms, as in all those I have seen, the flagellum passed directly outwards from the small chromatin mass. A good many individuals showed small chromatin particles in addition to the two main masses. These were sometimes arranged in a row along one border of the parasite. In some of the more elongate forms there appeared to be large chromatin masses irregularly disposed, so that it was difficult to say which mass represented the macro-nucleus. Captain Rogers figures a similar condition in some of his forms.

In this case development had apparently differed somewhat in its nature from that seen in Case 1. This variability would appear also to have occurred in Captain Rogers' cases, since he describes on one occasion flagellate forms on the first day. In this connection it is worthy of note that in some cultures, although sterile, a much darker colour of the blood was seen than in others. It is, therefore, possible that all cultures may not be under precisely similar conditions.

Case 4.—The patient had a greatly enlarged spleen and an irregular high temperature. About ·5 c.c. of blood was drawn off by splenic puncture and placed in two tubes. The tubes were placed direct into a cool incubator at 22° C. On the fifth day some large characteristic bodies were seen resembling those seen in Case 1. The specimen was not examined later.

Although I have examined only a small number of cases, the results have been amply sufficient to corroborate the changes described by Captain Rogers. But, although the presence of a nucleus and well-marked blepharoplast and the development of a flagellum point to the bodies being a flagellate, I do not feel justified, either from my own observations or from an inspection of Captain Rogers' drawings, in stating

that they are *trypansomata*. The relation of the flagellum to the large chromatin mass, even in the very elongate forms, does not suggest that the characteristic arrangement met with in trypanosomes is in process of development. On the other hand, it cannot be denied that the forms bear a very close resemblance to some of the developmental forms seen in cultures of *T. Lewisi*, and further study must determine what relation, if any, exists between the new parasite and the *trypanosomata* of mammals.

COLONIAL CIVIL SERVICE.

Mr. Cecil Wray, District Officer of Kinta, South Perak, who has been acting for some time past as British Resident of Pahang, Federated Malay States, has been confirmed in that appointment. Mr. Wray entered the Public Works Department of Perak in 1881, and has since served in all parts of the various Malay States.

Mr. E. J. Brewster, District Magistrate of Lower Perak, who succeeds Mr. Cecil Wray as District Officer of Kinta, entered the service in 1878, and has already acted in the office to which he has been permanently appointed. He is also promoted to Class II. of the Federated Malay States Civil Service.

Mr. E. B. Wright, Barrister-at-Law, has been selected by the Secretary of State for the Colonies for the office of Chief Justice of the Seychelles, in succession to Mr. F. A. Herchenroder, who has been transferred to Mauritius as Procureur-General.

Mr. F. R. Winn-Sampson, Travelling Commissioner of Southern Nigeria, is officiating as Divisional Commissioner of the Eastern Division of the Protectorate.

Mr. F. Bisset Archer, Treasurer of the Gambia, has arrived in England on leave of absence. In consequence of the absence also of Mr. H. M. Brandford-Griffith, the Colonial Secretary, the duties of Colonial Secretary will be performed by the Governor, and those of Colonial Treasurer by Mr. T. E. Peirce, the Collector of Customs.

Mr. A. T. Dew has been appointed District Officer of Lower Perak, Federated Malay States. He was formerly in the Royal Navy, and in 1874 took part in the suppression of piracy on the Malayan Coast. In 1881, Mr. Dew became Magistrate and Collector of Perak, and subsequently served in the Straits Settlements, but returned to the Federated Malay States Service as a District Magistrate in 1888.

The Hon. F. A. Gibson, Collector of Customs and Registrar of Shipping, Mauritius, having left the Colony on leave of absence, Mr. Silas Graves has taken over the duties of Collector, and Mr. C. A. D'Avray those of Deputy Collector of Customs.

Mr. John Phillips, one of the Senior Superintendents of Civil Police of the Gold Coast Colony, has been promoted to the position of Assistant Commissioner of Police.

Mr. Claude Severn, Assistant Secretary to the Resident General of the Federated Malay States, acts as Federal Secretary during the absence on leave of Mr. A. R. Venning, who has come to England for six months. Mr. B. W. Elles, a Passed Cadet, acts as Assistant Secretary in place of Mr. Severn.

The death is announced of Mr. A. M. Walker, Assistant Conservator of Forests, Ceylon, who entered the service in 1885 and joined the Forestry Department after a special training in India, seven years later.

The Hon. Thomas Capper, Inspector of Schools, Jamaica, and Mr. David Balfour, Clerk of Courts, Kingston, Jamaica, will arrive in England next week on leave of absence.

Mr. W. C. Rae, Second Assistant Colonial Secretary of Mauritius, is to succeed Mr. L. Martin as Colonial Postmaster and Superintendent of Telegraphs of that Colony. Mr. Rae entered the Colonial Secretary's office twenty-nine years ago, and is the author of a work dealing with the constitution, practice, and proceedings of the Council of Government of Mauritius. Mr. Martin, the late Postmaster, has been connected with the Mauritius Civil Service for forty-six years, and has served in the departments of the Surveyor-General, Auditor-General, and Immigration Agent-General, and for the past fifteen years as Colonial Postmaster.

Mr. W. H. Lee-Warner, a Cadet of the Federated Malay States, has been selected for the office of Inspector of Schools, Negri-Sembilan, and Secretary to the Sanitary Board of Seramban.

Dr. R. Denman, Chief Medical Officer, Seychelles, has left the Colony on nine months' leave of absence, during which Dr. A. N. de Gruchy, the Assistant Medical Officer, acts for him.

The appointment of Mr. R. S. de Vere, District Commissioner of the Gold Coast Colony, has been terminated from May 17th, on the ground of ill-health.

Mr. J. R. Innes, Secretary to the Resident of Perak, acts as Senior Magistrate of Perak, and Mr. W. P. Hume, District Officer of Batang Padang, as Secretary to the Resident of Perak.

Mr. H. P. C. Strange, District Commissioner, Corosal, British Honduras, having left the Colony on six months' leave of absence, Mr. R. Wyatt, Assistant Superintendent of Police, performs the duties of his substantive office in addition to those of District Commissioner of Corosal.

Mr. J. S. Drieberg, Office Assistant to the Government Agent, Colombo, Ceylon, has been promoted to the office of Commissioner of Requests, and Additional Police Magistrate and District Judge of Colombo.

Mr. T. R. Bennett, jun., has been appointed a Junior Magistrate of Natal on probation.

Mr. H. Berkeley has been selected for the office of District Officer of the Perak New Territory, and has been promoted to Class III. of the Civil Service of that State.

Mr. W. Bowen Rowlands has undertaken the duties of Inspector of Mines in Selangor, Federated Malay States.

Mr. Laurence Lewton-Brain, Mycologist and Lecturer in Agriculture on the Staff of the Imperial Department of Agriculture for the West Indies, has accepted the appointment of Assistant Director of the Pathological Division of the Experiment Station

of the Hawaiian Sugar Planters' Association, and vacates his present appointment next month.

Mr. R. D. Anstead has been selected for the office of Superintendent of Agriculture in Grenada, West Indies.

Mr. W. M. Tutcher is acting as Superintendent of the Botanical and Afforestation Department of Hong Kong.

Mr. C. S. Davson, K.C., Solicitor-General, British Guiana, has been granted six months' leave of absence from the 14th inst.; Mr. N. R. McKinnon will act during his absence.

Mr. A. M. Pountney, of the Federated Malay States Civil Service, has been transferred to the service of the Straits Settlements as Second Assistant Protector of Chinese, Singapore.

Mr. W. Shankland, of the Audit Department, British Guiana, acts as Chief Clerk during the absence on leave of Mr. C. H. G. Legge, and Mr. T. A. C. Maskell as First Class Officer.

Mr. F. R. A. Browne has joined the Police Department of Trinidad as a Sub-Inspector.

Mr. C. A. Pollonais is acting as Assistant Receiver-General of Trinidad.

Correspondence.

THE INDIAN MEDICAL SERVICE DINNER.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—The Indian Medical Service Dinner was held at the New Gaiety Restaurant on June 8th, when there were forty-eight officers of that service of all ranks present, a healthy sign already manifest in the matter of the new regulations regarding leave.

Among the many bronzed faces of the Tropical workers who battle daily with the enemies of mankind far worse at times than the truculent Lushai or the wily Pathan along the Frontier of India, shone hoary heads, lustrous as the diamond, at the head of the table, in striking contrast to the rest of the company. Great veterans of the Navy, Army, and Civil Medical Services of this great Empire, whose paler features in comparison with the majority present, presented grand testimony of the work done, being still done, and waiting yet to be done in the interest of humanity. We one and all love to cherish the thought, with a feeling of pride, that the Scions of the House of Æsculapius may be crowned with hoary locks and still have the keen eyes of the diagnostician, and the sparkling and bright wit of the genius, and they speak of the grand victories achieved in the great field of medical and surgical science, never ending, ever progressing, but still young.

Such names as Sir Richard Douglas Powell, Mr. John Langton, Director-General Herbert Ellis, R.N., and Surgeon-General C. C. De Renzy have only to be mentioned to be known. It is into the hands of such that the country and the Empire may well place the destinies of the medical organisation and the health of the people with safety and security in Peace and in War, for they form a noble wreath around the profession to guard the Empire, Home, and King from the stealthy army of micro-organisms.

The Toast list was as follows:—

(1) "The King."

(2) "The Queen, Prince and Princess of Wales, and other members of the Royal Family."

Both the above were given most graciously by the Chairman, and enthusiastically drunk by all present.

(3) "The Sister Services" was proposed in affectionate terms and responded to in real earnestness by Surgeon-General De Renzy and Director-General Ellis respectively.

It was the misfortune of the hour when the latter announced the unavoidable absence of the Director-General of the Army Medical Department, and thus it fell to the lot of the representative of the Naval Medical Department to respond on his behalf, and who fitly described the linking and union of the Sister Services, and in a few touching remarks showed how seldom it fell to the lot of the Naval Medical Service to meet their colleagues in the Indian Medical, either abroad or at home, and although they seldom met, yet their interests in life were one. He also referred to the greater opportunities they had of meeting their Sister Service, the Army Medical, abroad and at home, and since the I.M.S. met the R.A.M.C. more frequently out in India, his high opinion was thus established. Surgeon-General Ellis, amid loud applause, took his seat, while the Sister Services should enjoy most excellent health for the manner in which their health was drunk.

(4) "The Guests" toast was then proposed by Surgeon-General Branfoot, C.I.E., whose free and easy manner and style characterised the speaker accustomed to speak in public life and at great Board meetings. To this Sir Douglas Powell, K.C.V.O., then rose amid deafening cheers, responding with his usual courteous and friendly, refined, gentle and deliberate, and most delightful manner so characteristic of the courtly gentleman. He referred in eulogistic phrases to the immensity of the work done by I.M.S. officers, and received a still greater cheer when he resumed his seat.

(5) Mr. John Langton, F.R.C.S. in his good humoured and right earnest style, with a merry twinkle in his countenance which improved our digestions immediately, made a humorous reference to the manner in which he found himself in the position he occupied; but he could not well understand how it was he was there; but as the Chairman had already cautioned him to say very little he would obey the injunction. He felt, he said, very much in the same position as the clinical assistant did before the physician, namely, that he knew very little about the case. Lieut.-Colonel Fryer had, however, on the previous Sunday, paid him a visit and given him certain material with regard to the I.M.S.,—first, that they served with the Military two years, then were lent to some Native Chief, a potentate, and so forth; but he said such a deal in so short a time that he had quite forgotten it all. (Loud laughter.) I am sure Mr. Langton's brief speech did us all much good, for with the help of cigars, we were now beginning to feel an improvement in our pulsations. Mr. Langton took his seat amid thundering applause. Just then even the skies wept bitterly at the brevity of his speech, which of course was under strict injunctions, and not an unconscious bit of witticism on his part.

THE INDIAN MEDICAL SERVICE.

The Chairman, Surgeon-General Cleghorn, C.I.E., then rose to propose the above toast, and covered much ground in recording the traditions and work of a service in which he had been Director-General. Among other workers he referred to the benevolent and noble act of a surgeon in the earlier days of the Honourable East India Company, who, because of the unselfishness and magnanimity displayed to his country and countrymen had immortalised the Medical Service in India. The great name of Broughton will ever shine illustrious in the pages of Anglo-Indian history, for when, we are told by Surgeon-General Cleghorn, he was asked by the "Emperor Shah Jehan" to name his fee for curing his daughter, he (Broughton) merely asked that his countrymen should be allowed a plot of land to build factories upon and trade with India, instead of the fee. This was granted, hence Calcutta has grown up ever since as a great commercial city in the East. I (G. H. F.), would like, however, to make a small correction with regard to the Emperor who did this. It was not "Shah Jehan," but Jehanju, a contemporary of James the First of England. Both the Emperors (Jehanju and James I.) launched a royal decree

against the use of tobacco, then recently introduced into India and England.

Surgeon-General Cleghorn then described the multifarious duties of the Civil Surgeon who was also Superintendent of Jails among other things, and was expected to "make bricks without straw," thus showing that the *origo mali* of the whole system was based on false economy, and the I.M.S. officers who worked hard, under great difficulties and amid opposition and prejudice, among a mysterious people in a foreign land, suffered, since efficiency and good work were sacrificed for economy merely. He also described the unique opportunities the I.M.S. had in India for scientific research.

Lt.-Colonel Freyer, who was called upon for a speech, said that he found himself in the most enviable though unfortunate position of having to drink to his own health; but, that as he came from Erin's Isle, he felt he was quite capable of undertaking such a task.

In the course of his remarks, Colonel Freyer spoke on that familiar and modest topic of private fees in India from native chiefs and noblemen, recounting at the same time the allusion made by Surgeon-General Cleghorn with regard to that great Surgeon Broughton's magnanimous conduct in merely asking for a concession instead of a fee which would have enriched his coffers. In dealing with the "morality" of the service since those days, he stated in a somewhat good-natured and jocular fashion how another surgeon of the Indian Medical Service in recent times, when offered a large fee from a native chief had the "bad taste" to take it, and bank it in the "Bank of Bengal." He felt that such a bank did not exist in the days of Broughton for him to have done what he did.

G. H. Fink, Major I.M.S. (Retd.), M.R.C.S., L.S.A.
12, *Fairfax Road, Bedford Park, W.*
June 13th, 1905.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

Sir,—I notice that in the Journal of Tropical Medicine of March 1st you credit me with the statistics submitted as to Cyprus; this is incorrect, as I merely supplied the statistics, *with report*, having reference to the District of Larnaca. Reports and statistics from the six districts of the Island are forwarded to the Chief Medical Officer (F. C. Heidenstam, C.R.G.), who compiles them and forwards the result to England.

I am,
Yours faithfully,
George A. Williamson.

Larnaca, Cyprus.
March 17th, 1905.

Notes and News.

Bacteriology of the Desert.—Engel states in the *Zeitschrift für Klinische Medizin* that, in the neighbourhood of Helouan, Egypt, the average number of germs in 100 litres of air was 28. So small a quantity is only found in the polar regions and on the high seas. None of the germs were pathogenic to animals.

Beri-beri in Hong-Kong.—According to the report of the Principal Medical Officer, beri-beri prevailed in Hong-Kong during 1904 to a markedly increased extent compared with the previous year. In the Civil and Tung Wah Hospitals 812 cases of beri-beri were admitted during 1904 against 313 during 1903. Of the 724 cases admitted to the Tung Wah Hospital 329 proved fatal. All the patients suffering from beri-beri were Chinese. The Government in Hong-Kong have deputed two of its officers, Dr. Hunter, the Government bacteriologist, and Dr. Koch, one of the colonial medical staff, to investigate the ætiology of the epidemic. It is satisfactory to know that the enquiry has been placed in the hands of men so well qualified to deal with the question.

Standardisation of Disinfectants.—It is satisfactory to note that the process of standardisation of disinfectants is progressing. In the tender for disinfectants recently issued by the War Office the following condition appears:—"The contractor guarantees that tested against *Bacillus typhosus*, taking carbolic acid as the unit, the disinfectant will give a co-efficient of not less than ——. (The contractor to insert the exact co-efficient.)

Nursing in South Africa.—It is intended to establish a Nurse's Association in Natal. In up-country towns in Cape Colony nurses are wanted, but it would be well for nurses to secure an appointment before going out.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the Journal of Tropical Medicine *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"The Journal of State Medicine," April, 1905.

Ankylostomiasis in Westphalia and Hungary. T. Oliver.

In Westphalia in one year alone 20,000 miners were introduced. These men came from East Prussia, from Poland, and from Italy. At present Italian miners are accepted, if they satisfactorily pass the doctor's examination, but under no circumstances is a miner from Hungary received. Within the last two years ankylostomiasis has cost £100,000. It is believed that it was brought from Hungary, its spread being due to the compulsory use of water sprays, which were introduced in consequence of the explosions that occurred in the pits through coal dust.

In the valley of the Ruhr the number of cases was 1,030 in 1901, and 1,355 in 1902. At present no man can be employed at any mine until he has presented a medical certificate. At Bochum, during 1903, the patients treated for ankylostomiasis numbered 3,000. At the Lothringen Colliery 4,000 have been treated since 1894; two years ago 72 per cent. of the men were affected. Recently only 8 per cent. were ill. If 6 per cent. of the men employed in any pit are found to be suffering from ankylostomiasis, that mine is regarded as infected. Formerly the men objected to be treated for the disease, because they received only a minimum salary when off work, but, now, owing to full wages being paid to infected miners, the good feeding in the hospitals and the rest from work, men would come to the doctor bringing with them a jar containing the

fæces of a comrade whom they knew to be infected, in order that they might be allowed to go into hospital. At the present time every miner who is suspected or who looks anæmic is obliged to pass his fæces in a special lavatory into a jug provided for the purpose, and under the vigilance of a mine official.

At the Sopron-Brennberg Colliery, Hungary, seven years ago, upwards of 90 per cent. of the miners were affected by the worm; at the present time about 30 per cent. of the men are suffering from ankylostomiasis. A few years ago, when the mine was more infected than now, the men suffered considerably in their health. They were extremely anæmic, and so ill that they could not follow their employment; their feet were swollen, and the men on the slightest exertion became so short of breath that many of them could scarcely walk. By degrees the virulence of the epidemic subsided, so that new patients do not suffer so severely as the miners of a few years ago.

The temperature of the Sopron Colliery is in places high—104° to 108° F. (40° to 45° C.)—but if the heat is not lowered by sprays of water it may rise to 173° F. (80° C.)

Throughout the mines there are cisterns filled with water and compressed air at a pressure of 30 atmospheres, and these are turned on, now and then, to cool the mine.

When the disease affects for the first time a mine, the men who become infected generally suffer rather severely. As time goes on, either the men become more resistant to the ravages of the parasite, or the worm itself becomes less virulent, for occasionally at a *post-mortem* examination there may be many ankylostomes found in the intestines without any grave symptoms having been detected during life.

The disease might be prevented (1) by making the mines healthy, but it is not always easy to render a damp mine dry, and it is often difficult to reduce the temperature; (2) by prohibiting infected men from working underground; and (3) absolute prohibition of the miners defæcating underground unless into the receptacles provided for that special purpose. Means should be taken to screen off these receptacles in the mine, and the men should be encouraged as far as possible to use the closet accommodation provided for them at the pit-head.

The recent regulations of the Austrian Minister of Agriculture should do much to prevent the spread of the disease in Hungary. New miners must pass a medical examination (three samples of dejecta being examined under the microscope), and in the case of an infected mine 10 to 20 per cent. of the underground staff must be examined microscopically. This requires great care and special experience, as rhabdites are often with difficulty differentiated from the larvæ of ankylostoma. The sludge in various parts of the workings must also be examined. Miners who have been infected and treated must produce a medical certificate of freedom from the disease before again being allowed to work. Each working colliery must provide suitable closet accommodation above ground and below ground, one cabinet for every thirty men of the staff; but at infected or suspected mines the number of cabinets must be not less than one to every twenty men of the total staff. The receptacles must be emptied and disinfected daily. A proper supply of drinking-water in closed vessels must be provided for the men, changed once a day, and the taps so arranged as to prevent direct drinking from the spouts or contamination by dirty hands. These regulations will do much to prevent the spread of ankylostomiasis in Hungary, and it is hoped may ultimately lead to the disappearance of the disease.

T. P. B.

"California State Journal of Medicine," April, 1905.

Uncinariasis: Report of Seven Cases. By H. Gunn, San Francisco.

"Brooklyn Medical Journal," April, 1905.

Elephantiasis of the Scrotum. By W. F Campbell.

EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Medicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate. Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular. West Africa.

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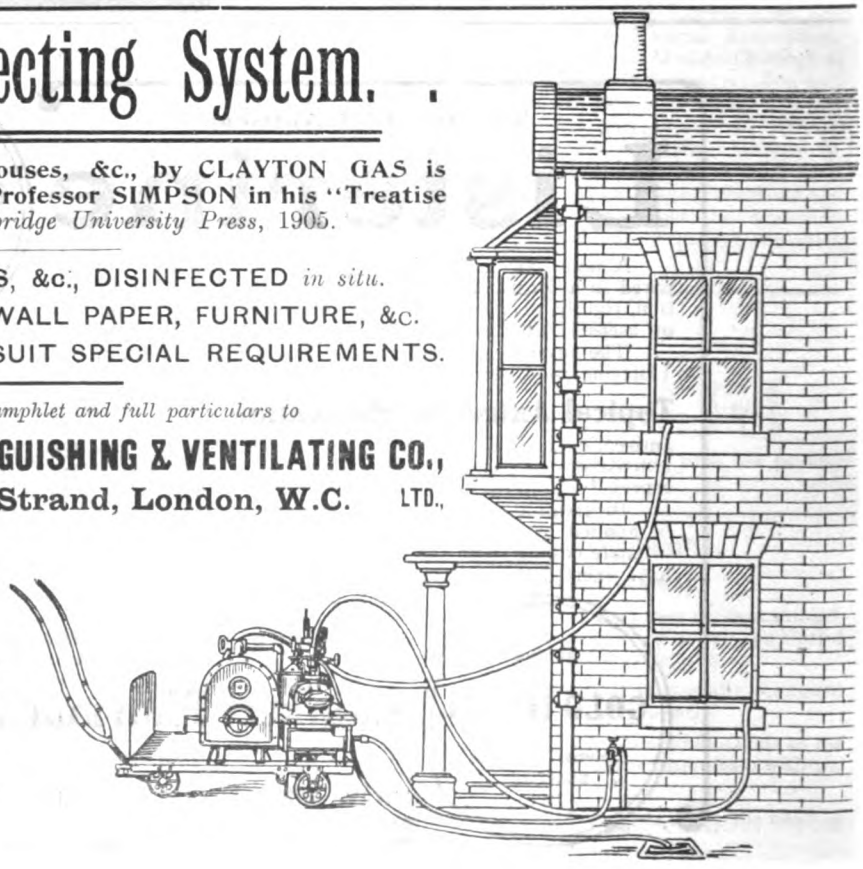
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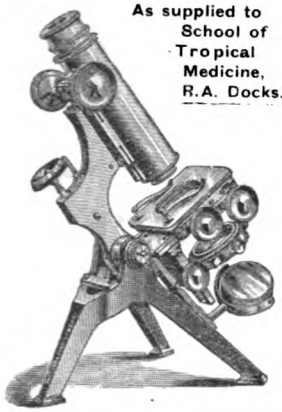
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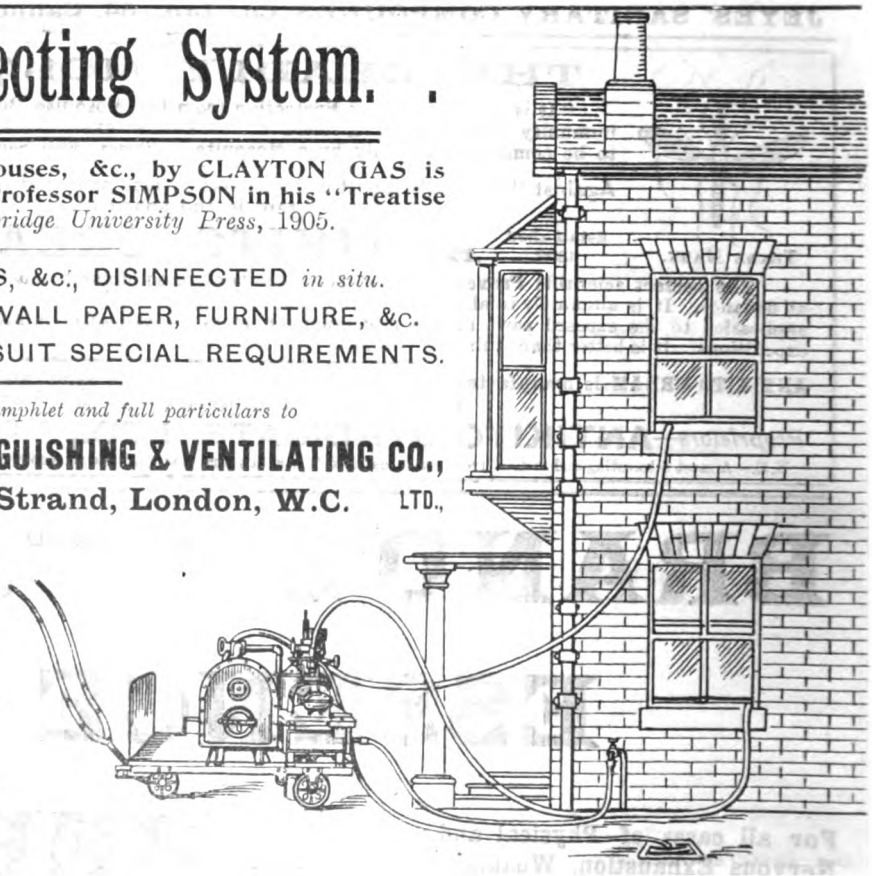
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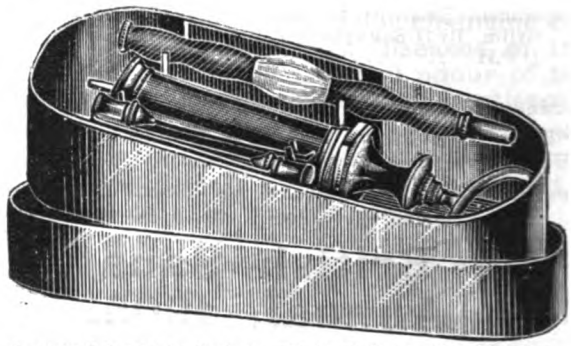
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REPORT UPON THE GENERAL SANITARY CIRCUMSTANCES OF THE MALTESE ISLANDS, WITH SPECIAL REFERENCE TO THE PREVALENCE OF MEDITERRANEAN FEVER THEREIN.

By Dr. RALPH W. JOHNSTONE.

Medical Inspector Local Government Board.

ABSTRACT.

BRIEF DESCRIPTION OF THE MALTESE ISLANDS.

THESE islands include Malta, Gozo, Comino, and Cominetto. The two latter are islets, and, save for the hospital for exotic disease on Comino, with its caretaker, are uninhabited.

The island of Malta is about 17 miles long by 8 wide, having an area of 91 square miles. In 1901 the resident population was 176,127.

Gozo is about 9 miles by 4½, with an area of 26 square miles. Its population was 20,002 in 1901.

Both islands are covered by low hills, which, with their intervening valleys, leave little or no flat surface. Every available inch of land is cultivated, but the fields are shut in by high stone walls, which gives the country its characteristic stony and sterile appearance. There are no rivers.

Geologically the formation is an Upper Coralline limestone, under which are successive beds of greensand and marl, overlying a Globigerina limestone (often locally called calcareous sandstone), which again overlies a Lower Coralline limestone. Practically, all the inhabited part of Malta is denuded down to the Globigerina limestone, with occasional outcroppings of the Lower Coralline formation, and one or two patches of alluvium. The north-western and more elevated part of Malta is, however, covered by the Upper Coralline limestone, as is also the higher ground in Gozo.

PART I.—GENERAL SANITARY SURVEY OF THE MALTESE ISLANDS.

Density of Habitation.—The population enumerated on land at the census of 1901 showed an average density of 1,671 persons to the square mile, or in Malta 1,926 to the square mile, and in Gozo 775.

Dwellings.—All the dwellings are constructed of stone, generally in two storeys with a flat roof, which is utilised to collect rain-water. The flooring of rooms is generally constructed of porous stone, which forms a fine dust with surface wear. Rabbits, hens, cats and dogs are kept in the houses, and sheep and cattle are housed in outbuildings, which usually abut on the dwelling-house.

Excrement Disposal.—The method most generally employed is what is known as the hand-flushed water-closet. It is placed sometimes in the open yard in a niche in the wall, frequently in the kitchen a foot or two from the cooking apparatus, or it may be in a small cupboard (1′ × 2′ usually) in the external wall of the house, or in the steps leading to the entrance hall from the front door, and sometimes even in the open street. It is very exceptionally found in a special room or in a position where it is likely to be used in the usual manner. In those poorer class houses which have got a special room for the water-closet, the room serves often also as a larder or food store. The hand-flushing of these closets is conspicuous mainly by its absence. They are usually caked with filth, and the surroundings fouled with fæcal matter.

The next most frequent method is what may be called the misbla system. A misbla is a dung-heap, and it may be placed in the garden or yard, or more frequently in an outhouse adjoining the living rooms, or in an ordinary room in the house. Here all the excrement of the family is carefully preserved for removal to the fields. On one occasion on asking to see the vessel used for conveying excrement to the garden, I was shown the bucket in which the vegetables for the family dinner were being washed.

The military and naval latrines, or "heads," on board ship are of a better pattern.

Public urinals sometimes have no water supply, and thus become very offensive.

House Refuse Disposal.—There is no regular system for collection of house refuse in Malta. Ashpits or bins are almost unknown. Refuse is thrown into the garden or into the street.

Sewers.—The sewers in the villages which have existed for centuries are built of or cut in the porous rock, being more in the nature of galleries than sewers, and they are not in any way rendered impervious. They act as elongated cesspools where the liquid sewage gradually soaks away into the rock, leaving a semisolid residue.

Cesspits, in the case of new houses, are built under the street and are ventilated and cemented. In the old houses the cesspits are often under the dwelling-rooms and unventilated. Very frequently they are placed close to the water-tanks.

Water Supply.—There is a public water supply laid on to every village in Malta except Mellieha. The water is derived from groups of springs in three different localities, which afford an approximate mean daily yield of 418,500 gallons by gravity. In addition, there are three other sources from which potable water is pumped, the mean daily yield being about 693,000 gallons. Besides the drinking water there is a brackish water found at Armier, and pumped to Valletta, where it is used for watering streets and flushing sewers. The main storage reservoirs for drinking water are at Ta Kali, near Attard, and are capable of holding 16,865,200 gallons. The total storage capacity of the island is 18,980,000 gallons. The gathering grounds for the water supply are for the main part in thinly populated portions of the island. The water is

collected in galleries driven in the rock deep below the surface, and conveyed by iron pipes to the tank or pumping-station. From there it is distributed by cast-iron pipes or by stone channels built in and lined with cement. The water is usually distributed by means of stand-pipes in the villages. In Valletta the houses generally have taps, but they are often without them, and outside the area surrounding the harbours taps are seldom found in the houses. In some villages there are large underground tanks provided by the roadside, which are filled in the winter from the public water supply. These tanks are seldom fitted with pumps, and in consequence become very foul from the constant lowering into them of buckets which have been allowed to stand on the roadside. The vicinity of pervious cesspools provides a possibility of pollution which is often present.

Practically every house in Malta has underneath it a large tank for collecting rain-water from the roof. The contents of these tanks very often show signs of pollution, nor can this be wondered at when it is considered that the roof is very much used by the family in summer, and by their cats and dogs. Tanks are never supplied with pumps, and the bucket which is lowered into them by a rope is often placed on the yard flags amidst slop water and pollutions due to animals or to the neighbouring water-closet. There are very few wells in Malta.

In Gozo the public water supply is obtained from similar sources to that of Malta, the total mean daily supply amounting to about 143,000 gallons, derived from three principal sources. About 90,000 gallons of this water, coming from two sources, is brackish, and about 50,000 gallons, coming from the other source, is good water. The two qualities are mixed before distribution, and the result is a water containing considerable quantities of magnesium salts, which is likely to affect new comers prejudicially.

Notification of Infectious Disease.—There is no payment for notification, and though there is a penalty for neglect to notify it is difficult to exact, and in point of fact never has been exacted. Many considerations interfere with the accurate notification of Mediterranean fever.

A Maltese medical man of experience stated that he did not think more than a third of the cases of Mediterranean fever that occurred in Malta were notified, and not more than a fifth of those in Gozo.

Isolation.—Mediterranean fever is not isolated.

The usual source of milk in Malta is the goat. These animals are driven about the streets in flocks, and are milked at the customer's door into his own vessel. The udders, which are abnormally large, often touching the ground, are very liable to be soiled. The proprietors of herds are so many that it is always difficult to ascertain from a householder where he has got his milk. No regulations are in force for the effectual control of these vendors.

The regulation against throwing refuse and offal into the streets is not enforced, or very feebly so.

Part II.—Mediterranean Fever.

The study of Mediterranean fever virtually commenced by Marston's paper in 1861, and received its great impetus from the discovery of the *Micrococcus melitensis* by Bruce in 1887.

In 1897, Wright and Semple, by introducing the serum agglutination test, placed matters on a more exact basis. This method was in 1900 adopted as a routine practice in the Army, and shortly after in the Navy.

Since the publication of Hughes' book in 1897, Mediterranean fever has attracted considerable attention in the Army and Navy, and much has been written about it.

The Geographical Distribution of Malta Fever.

The following list of places from which Mediterranean fever has been reported is taken, with slight additions, from the *Journal of the Royal Army Medical Corps*, vol. ii., No. 4: *Spain*—Gibraltar; *Islands of the Mediterranean*—Balearic Islands, Corsica, Sardinia, Sicily, Malta, Gozo, Cyprus, Crete; *Italy*—Rome, Naples, Caserta, Benevento, Campobosso, Aricca, Terano, Fermo, Padua, Cittanova, &c.; *Greece*—Athens, Cephalonia; *Turkey*—Constantinople, Smyrna; *Palestine*—Jerusalem; *Africa*—Tunis, Algiers, Alexandria, Suakin, Massowah, Zanzibar, Kimberley (?); Aden; *India* — Calcutta, Mian Mir, Nowshera, Secunderabad, Simla, Delhi, Lucknow, Agra, Allahabad, Choabattia, Subatha, Assam, Swat Valley; *China*—Hong Kong, Philippine Islands, Fiji Islands; *North America*—Mississippi Valley; *West Indies*—Cuba, Puerto Rico; *South America* — Venezuela, Brazil, Monte Video.

This list will probably undergo considerable enlargement and alteration in the future.

Hitherto, Mediterranean fever has not been reported north of 45th parallel or south of the 40th.

Incubation Period.—The usual incubation period of Mediterranean fever is not more than eight or ten days.

It may be provisionally stated that the data available tend in some degree to suggest that the incubation of Mediterranean fever ranges about a period of fourteen days.

Distribution of Mediterranean Fever in the Maltese Islands.

Mediterranean fever occurs in every part of Malta and Gozo, on the sea-coast and inland, though as a rule its relative incidence is less severe in the villages more remote from the capitals.

Comparing the three areas for the period 1894 to 1903, it appears that the average number of cases of Mediterranean fever per year per 10,000 inhabitants was:—

(1) Urban drained area	18·8
(2) Suburban undrained area	41·8
(3) Rural area	33·4

It appears that when Mediterranean fever attacks the crew of a ship one year, it is very likely to attack the crew of the same ship in each of the following years that she remains on the station. There is little relation between the number of days spent by a ship in Malta and the number of cases of Mediterranean fever which occur on board her.

Age.—The facts seem to point to the ship herself becoming infected, and in some way assisting in the transmission of infection. Of course, the larger the crew the greater the chance of infection being introduced into the ship from outside.

From the figures of the two years 1902 and 1903, it would appear that men under 25 years of age suffer more than the average number of attacks per 1,000. From 25 to 40 there is a degree of immunity becoming less with advancing years. Over age 40 the incidence again becomes severe. The deaths are too few to permit of any useful deductions being made from them.

Length of Service in Malta.—The heaviest incidence of Mediterranean fever is upon men with less than one year's service; in fact, they are the only class shown with an incidence greater than the average incidence of the disease upon all classes taken together. The incidence upon men with over two years' service is less than half that upon men with under two years' service, and the severity of incidence continues to decrease with length of service up to five years, after which it again rises.

The Case Mortality.—Amongst the civil population of Malta, 8·9 cases per 100 attacked died during the period 1894 to 1903, and amongst the civil population in Gozo, 8·4 per 100 attacked died during the same period. In the Army, during the period 1897 to 1903, the case mortality was 3·2 per cent., and in the Navy it was only 1·4 per cent. during the period 1897 to 1901.

Temperature and Rainfall in Connection with Mediterranean Fever.—There is a very close correspondence between the temperature and the number of cases. The temperature attains its maximum in July and continues high during August, after which it begins to drop.

The rainfall attains its minimum in July, but it is almost as low in June and August. The "case" curve commences to drop at the same time that the rainfall curve commences to rise, allowing no interval for incubation and notification, so that the connection is not clear; nor does the steep rise of the rainfall curve at the end of September produce a correspondingly steep decline in the case curve as might have been expected were the connection between the two intimate.

The maximum prevalence of Mediterranean fever would appear to be in the month of August, and the minimum in February.

From February to August there is each month a steady increase in the number of cases, except for a slight drop back in April, and from August to February a steady decrease.

Consideration of Ways in which the Infection of Mediterranean Fever may be Transmitted.

(1) *Direct personal infection* (that is, by contact, or by the breath, or by the saliva).

Amongst 100 houses which were visited, in all of which Mediterranean fever had been notified during 1904, in six only had there been more than one case notified.

The cause of special incidence of Mediterranean fever in the hospitals does not on the evidence obtained appear to be direct personal infection, since that would probably be more evident in the hospital where least isolation is attempted. Neither is the evidence in favour of a place infection, to which the patients would probably be more exposed than the staff, and would, in addition, constantly present fresh material.

(2) *Excretal infection* may occur by means of infected dust inhaled or swallowed, by contamination of the hands, and thence the mouth, or by contamination of food or drink.

Dust is very prevalent out of doors in Malta because of the friable nature of the rock and the hot sun, and owing to the high winds prevalent, opportunity of inhaling or swallowing it is present during the greater part of the year.

The observations in this direction, however, do not indicate that contaminated dust in the open air has a marked influence upon the incidence of Mediterranean fever.

Abundant opportunity for soiling the hands and for pollution of the food is afforded by the methods of excreta disposal in use in the islands. The evidence is in favour of the probability of excretal pollution of the hands or food, or of dust inside houses having played a part in the spread of infection. As against this probability there is the fact that amongst the civil population, where opportunity of this kind of infection is far greater than amongst the garrison or Navy, the case incidence of Mediterranean fever is in general about one-eighth as severe. Here, however, the notification returns are probably at fault.

(3) *Newly-turned earth* has been suspected by more than one observer to be a cause of outbreaks of Mediterranean fever. When the porous nature of the rock in Malta is considered together with the fact that sewage has been allowed to percolate into it and into the soil above it for centuries, it does not seem remarkable that digging operations should have been suspected.

It would not seem, however, that opening streets to lay sewers or digging in the porous soil has any marked effect in increasing the prevalence of Mediterranean fever.

(4) *Biting Insects.*—The researches of Shaw and Gilmour would show that it must be a matter of some difficulty for a biting insect to infect himself from the human subject, seeing the sparse numbers in which the micrococcus has been found in the peripheral circulation, and the small amount of blood the insect is capable of taking. Similarly, the chances would be infinitesimal of an insect carrying even a single *Micrococcus melitensis* mechanically upon his proboscis. On the other hand, it may be said that if certain biting insects like mosquitoes were capable of infecting themselves with Mediterranean fever and of transferring the infection, the disease would be much more prevalent than it is.

(5) *Water* does not appear to have played any considerable part as a carrier of Mediterranean fever infection in Malta.

(6) *Milk* is not so closely connected with water in Malta as it is in most other countries, because the great majority of people get their milk supply in their own vessels direct from the goat.

(7) *Uncooked Foods.*—Enquiry was made in a large

number of cases with regard to fruits and vegetables, or salads, but nothing tending to incriminate these articles of diet was elicited.

(8) *Infection by Cuts or Abrasions.*—No connection was established between breaches of continuity in the skin and subsequent attacks of Mediterranean fever.

CATARACTS AND SECONDARY CATARACTS AND MEMBRANOUS OPACITIES OF THE VITREOUS.

By Major G. H. Fink, I.M.S., M.R.C.S., L.S.A.

In December, 1894, I read a paper before the Indian Medical Congress in Calcutta on the "Treatment of Certain Cases of Impairment of Vision after Cataract Operations Performed with Success," and which paper comprised Part II. of my *brochure* on the "Methods of Operating for Cataract and Secondary Impairments of Vision, with the Results of Five Hundred Cases," published in 1894 by Messrs. J. and A. Churchill, of London.

This part of my work was published in p. 173 of the *Transactions of the First Indian Medical Congress*, and I would draw attention to the following points in Part I. of my book first, before taking up the point regarding membranous opacities:—

(1) The question of iridectomy is discussed in p. 18.

(2) The question as to whether the capsule of the lens should be pricked or not is dealt with in pp. 21-22.

(3) The last stage in the coaxing out of the lens is given in pp. 22-26.

There are two points connected with my operation for cataract which during my experience I found most useful, namely (*a*) the nature and position of eye speculum; (*b*) the irrigation of the anterior chamber of the eye with a 1 in 10,000 perchloride of mercury solution, which I employed. These two points are given in p. 12 and p. 23 of my *brochure* on cataract above mentioned.

I mention them, because since my work has been published, I observe that Elliot of Madras, and another operator of the eye, have mentioned these points as if they were original discoveries made by them respectively.

With regard to the question of iridectomy or non-iridectomy, and the extraction of cataract either whole in its capsule or by laceration of the capsule before extraction is done, I can only affirm what I have already said with regard to these points in the pages above referred to, and I can only repeat that these measures in India and in Great Britain are decided by the merits of each case, and in this I am, I feel, largely supported by the majority of operators of any great experience. With regard to Indian operators of experience, I would ask reference to the remarks in p. 179 of the *Transactions of the First Indian Medical Congress*, by M. G. Naidu, of Madras, and C. Mitra, of Kashmir, since from their opinions it will be observed that racial influence and habits, with dietary, have a strong bearing on the nature of the cataracts in the West and East respectively; hence the treatment by preliminary iridectomy and capsulotony are decided upon by the merits of the case before you for operation.

With regard to the point of membranous opacities of the vitreous, I would desire to say, that when I read my paper before the Medical Congress in Calcutta I had performed over 1,000 operations for cataract, which, I need hardly say, would entitle me, therefore, to make my remarks with certain authority. I would draw attention once again to the point given in p. 63 of my *brochure* and p. 176 of the *Transactions of the First Indian Medical Congress*, and the measures adopted in the treatment. Such opacities are termed "secondary cataract" by Swanzy, who states: "The term secondary cataract is also used in cases in which, after a cataract extraction, the capsule of the crystalline lens which is left behind presents an obstacle to good sight." (The hyaloid membrane and capsule were considered identical membranes then.)

Moreover, although it is generally thought that "membranous opacities," which are occasionally seen in the vitreous, are hardly ever amenable to treatment, yet Von Graefe in such a case "tore through a membranous opacity with a good result." "Let sleeping dogs lie" may be an axiom to be followed with advantage in most cases, and yet in a small percentage, such as 2½ per cent., cases of cataract operations, where the operation has been performed with perfect success, and vision (which is tested with fingers before the patient's eye to count in India) is absent, justifies the procedure I have adopted with success. We are told that "recently this operation has, however, been repeated in several cases with encouraging results."

I had the misfortune of being criticised unfavourably by a member of the I.M.S. at the Medical Congress at Calcutta, when I read the paper there, who had, I afterwards learnt, performed about 100 operations only for cataract. The Sectional Editor of that Congress, in the Surgical and Ophthalmological Section, reported, with regard to the remarks made by this speaker, that "he was of the opinion that in these cases the cataract was immature. In extraction some transparent layers had been left behind and escaped notice." I maintain that the results I had in the North-west Provinces and Oudh would themselves affirm that all operations for cataract performed by myself were done by eclectic methods and strictly under antiseptics, with irrigation of the anterior chamber, so that the criticism in the face of these facts and the above confirmation quoted, show that Major F. P. Maynard, I.M.S., then was not fully qualified nor justified in making such an unfair criticism, when his experience was practically *nil* in such cases as compared with men who had done their 1,000 cataract operations. I trust that he has had reason to alter his views since, for, with wider scope and better opportunities, I feel sure he will come across such cases in the North-western Provinces, if not in Calcutta, which I learn is to be the future field of his work, and I can only say, I wish him and his patients every success. I have been obliged to publish this, as the remarks in my reply to Maynard were not published in the *Transactions*.

Before closing, I would desire to point out that, in a review of my *brochure* on cataract in the *American Journal of Medical Science*, Fox, of Philadelphia,

had been working, we are told, at this same matter as I had written upon, about the same time.

I trust Major Maynard will excuse my drawing attention to a matter in which it was considered best at one time to "let sleeping dogs lie," but which recently has been awakened because of the encouraging results, and I think I have succeeded in awakening some interest in these dark little points in the eye.

ON THE CLASSIFICATION AND PATHOLOGY OF BERI-BERI.

By Hamilton Wright, M.D.(McGill).

Abstract No. III.

Classification of Beri-beri.

Acute Pernicious Beri-beri, in which the onset is sudden, with more or less severe symptoms of gastro-duodenal irritation and cardiac paralysis. There may be varying degrees of pulmonary, vaso-motor and sensori-motor paresis. On first examining a case in this class it may generally be predicted that death will shortly occur.

Acute Beri-beri, in which the onset is sudden, though never so sudden as in acute pernicious beri-beri, with more or less noticeable symptoms of gastro-duodenal irritation and concomitant vaso-motor and sensori-motor paresis.

Subacute Beri-beri, in which the onset of the disease is more insidious than in either of the above classes of cases; in which the symptoms of gastro-duodenal irritation may escape notice, and in which the concomitant sensori-motor and vaso-motor paresis may be so slight as to involve only one or two movements, a few areas of sensation and the vascular supply to the front of the legs.

Beri-beric Residual Paralysis or Neuritis, or the disease as it appears after the symptoms of gastro-duodenal irritation have disappeared, and after the causal organism and its toxin have accomplished their work and been eliminated. Our *post-mortem* statistics of the disease and the major portion of our clinical observations are based on this class of cases.

Acute Pernicious Beri-beri.

Clinical Summary.—The onset in this class of cases of beri-beri is generally sudden, and those attacked are amongst the lustiest of their fellows. A premonitory syndrome, suggestive of gastro-duodenal irritation, is marked. A man who yesterday would have attracted attention because of his fine physical condition will to-day complain of loss of appetite or of a dislike of solid food. In the Kuala Lumpur Gaol, where beri-beri had long been prevalent, and where cases could be watched from the initial stage of the disease, I found that a complaint of loss of appetite and a request for *congée*, or rice porridge, were the precursors of more marked symptoms of gastro-duodenal irritation. Within a few hours, never more than twelve or fourteen, a dull pain or a never clearly described dull, oppressive feeling would be complained of, and referred to the epigastrium. There would be also complaint of a heavy, sickish feeling in the stomach. Deep pressure of the epigastric region intensified all of the sensations referred to it. Almost immediately following the onset of the epigastric symptoms the epigastrium would begin to more or less distinctly bulge. The throat would be found moderately congested. Fever might be complained of. I was not, however, able to verify its presence.

At the onset of the attack, and while the epigastric sensations occupy the patient's mind, it is rare for him to complain of anything that would indicate an impending disturbance of nerve function. If, however, a careful examination is made, it may generally be demonstrated that there are areas of anæsthesia or hyperæsthesia over the distribution of the cutaneous branches of the anterior tibial and musculo-cutaneous nerves in the legs. The irritability of the anterior tibial and peroneal muscles to the interrupted and continuous current is altered, and the knee-jerks are greatly exaggerated. The latter are decidedly minus or altogether absent. Perhaps a sensation of pins and needles or as of ants crawling in the skin of the dorsa of the feet or of the front of the legs may be complained of.

In all cases of this class, however, early, sudden intimations are given which declare the action of the beri-beric virus on the entire cardiac nervous system. Even within twelve hours the heart proclaims its release from nervous control. The vessels in the neck, the larger arteries in the limbs and the epigastrium throb violently and perhaps irregularly. An irregular, massive wave sweeps over the precardiac area or even over the whole chest with every beat of the heart. Various hæmic murmurs are audible at the apex. The slightest exertion on the part of the patient causes the pulse to rise rapidly in time and to become irregular. The heart, especially the right side, becomes greatly dilated, the lungs give signs of engorgement, shortness of breath follows, and the patient passes to death through an agony distressful to see. It is always a surprise to observe that patients are mentally clear up to a few moments of dissolution.

Pathological Summary.—The external appearance of the cadaver of a case of acute pernicious beri-beri depends largely on the amount of œdema which developed before death. A general anasarca will mask other signs. In cases where there has been but moderate œdema the veins in the neck are found swollen. Various degrees of *post-mortem* ecchymosis are present. If the death agony was of long duration *rigor mortis* sets in early. The eyes are found partially closed, the fingers contracted, and there may be a blood-stained foam on the lips. The throat is generally found reddened. On opening the abdominal, pleural and pericardial cavities a varying amount of clear straw-coloured fluid is found. The stomach and upper part of the small gut are seen to be moderately dilated and empty. The walls of these parts are toneless. The gastro-duodenal mucosa may be moderately congested, or exhibit an angry inflammation or hæmorrhagic erosion. In all cases the pyloric end of the stomach and the valvulæ conniventes of the duodenum are the seat of discrete or more or less confluent hæmorrhagic extravasations. On the other hand, actual extravasation may be absent, and then the

crests of the valvulæ conniventes are deeply injected. Where extravasations are numerous and confluent, or where hæmorrhagic erosion has occurred, a thin pellicle of blood-stained mucus can be stripped from the underlying mucosa. I have not, however, observed a diphtheritic or a pseudo-diphtheritic membrane. The inflammation may extend to the jejunum. In two cases I have observed extensive inflammation as low as the cæcum. As a rule, the changes are confined to the duodenum, the upper few feet of the jejunum and the pyloric end of the stomach. Microscopically the affected parts of the gastro-duodenal walls exhibit the main features of an acute inflammatory process. There is active congestion, small-celled infiltration, cloudy degeneration and necrosis of the lining and glandular epithelium of the mucosa. Mast cells are present in unusually large numbers; polymorphonuclear leucocytes are always present in the mucosa and submucosa. The nuclei of Auerbach's and Meisner's plexuses are generally swollen and exhibit various degrees of eccentricity. Transcurrent nerve-fibres in the walls of the stomach and duodenum generally show the early and late first stages of change. In the damaged mucosa lying between the epithelial cells I have observed a bacillus of constant morphological character in five of the six cases of acute pernicious beri-beri submitted here.

In connection with the gastro-duodenitis observed in this class of cases, it is of interest that a varying number of the primary set of mesenteric glands in the vicinity of the stomach and duodenum are generally found acutely swollen. Microscopically they exhibit active congestion and a moderate degree of cellular necrosis. No bacteria are present.

Next to the stomach and duodenum the heart is of most interest in acute pernicious beri-beri. The entire cardiac nervous system, inhibitory, accelerator and intrinsic, seems to be affected by the beri-beric virus in acute pernicious beri-beri.

In acute pernicious beri-beri the kidneys are usually found moderately congested.

The lungs show no changes that can be considered as characteristic even of acute pernicious beri-beri.

The spleen may be swollen, and the liver is generally found passively congested.

The muscles, if their nerves have been affected by the beri-beric virus, are flabby. No interstitial changes are noticeable.

If œdema has been a marked feature of the attack the nervi vasorum of the vessels in the œdematous areas exhibit the first stage of change. So also do the nerve-cells in the solar and other sympathetic plexuses.

Acute Beri-beri.

Clinical Summary.—The onset in this class of cases is similar in form, but differs in degree from the previous class. The premonitory syndrome of gastro-intestinal disturbance is perhaps not so marked. By the end of ten days a patient may be robbed of all voluntary movements of the limbs and trunk, the intercostals and diaphragm alone escaping. The diaphragm or intercostals may be slightly weakened. The various forms of sensation may be widely disturbed. Even the fifth and seventh cranials may be involved. On the other hand, the sensori-motor paralysis may not extend beyond the lower limbs. A combination of paralysis not infrequently seen is complete paralysis of the lower limbs, and partial paralysis of the fingers and forearms. Any degree of œdema may be present, and this quite independent of the sensori-motor and cardiac paresis. I do not think that the nervous system of the heart ever fully escapes in acute beri-beri; but the great violation of it seen in acute pernicious beri-beri does not occur. Cases of acute beri-beri seldom, if ever, die in the really acute stage of the disease.

Pathological Summary.—It is rare for cases of acute beri-beri to succumb in the acute stage of the disease, *i.e.*, while there are distinct evidences of gastro-duodenal inflammation, and during the development of the paralytic symptoms. It is generally some time after the gastro-duodenal syndrome has disappeared, and when the paralysis has developed, that the patients die.

Subacute Beri-beri.

In this class may be placed all those which Scheube terms rudimentary beri-beri. The premonitory syndrome of gastro-duodenitis is slight. The knee-jerk is lost in a few days. Numbness of the hands and even a slight paresis of the movements of extension of the wrist may develop; but as a rule the sensori-motor disturbance is restricted to the legs and feet. Various grades of œdema may develop in this class of cases, as in the others. It is never general, however. It is only rarely that signs of poisoning of the cardiac nervous system are demonstrable. The chief defect which appears is a tendency for the heart to beat more rapidly than it should on slight exertion. No irregularity develops, and there are no signs of tricuspid insufficiency. It is improbable that the nervous mechanism of the heart wholly escapes in any class of cases of beri-beri.

For the class of cases of acute and subacute beri-beri which do not recover on the elimination of the beri-beric virus, but remain in a more or less severe state of paralysis, I have proposed the name *beri-beric residual paralysis.*

Beri-beric residual paralysis may persist for almost any length of time, depending upon the extent of the original lesion in the cardiac nervous system, or the ability of those affected to withstand the effects of intercurrent maladies. I have notes of a case which had endured paralysis of extension of the ankles and loss of sensation in the legs for sixteen years.

The usual course is for such cases to succumb in from one to five years from heart failure, as the result of over-taxation of the diseased organ or from intercurrent affections, such as dysentery, Bright's disease, phthisis, pneumonia, or repeated attacks of malignant malaria.

During life the symptoms are those of any chronic neuritis, the amount of paralysis of a given movement or quality of sensation depending upon the extent of the initial poisoning of the neurones involved.

Pathological Summary.—It is of great importance to remember that the large majority of cases of beri-beri which come to the *post-mortem* table are cases of beri-beric residual paralysis or neuritis. These cases

have been searched by many to discover the active agent of the disease. The beri-beric residual paralytic is simply a nervous wreck, whose active cause has long since accomplished its work and departed. A gastro-duodenitis is never seen. Mesenteric glands are never found swollen; petechiæ are not to be observed in the serous membranes; granular degeneration of the kidney epithelium is rarely found; foci of small cells are not present in heart or kidneys. In fact, there are no positive signs of an acute process in any organ of the body.

Stages of Neuronal Change.

Early First Stage of Change.—The earliest stage of change that I have been able to detect in the neurones by Marchi's and Nissl's methods is, by the former, a slight black flecking of the myelin about the nodes or scattered discreetly along the internodes. If the case is one that has suddenly succumbed from the effect of the toxin on the whole mass of cardiac neurones, and before more than just a moderate general atonic paresis of the lower limbs is demonstrable, rounded droplets of altered myelin are not visible except in a few of the cardiac fibres of the vagi.

Where the changes in the selected fibres are not more advanced than as above, the parent cells are seen by Nissl's method to be slightly rarefied and to have swollen, moderately eccentric nuclei (axonal reaction). The Nissl's bodies of the processes have almost wholly disappeared, or they are extremely tenuous, and the small particles which compose them appear to be slightly dissociated. The Nissl's bodies of the periphery of the cell are also likewise involved. This part of the cell has the appearance of blued, thin ground glass. These changes are of course seen in the ventral motor cells of the cord, pons and bulb. The changes in the sensory cells of the posterior spinal ganglia and corresponding ganglia of the cranial nerves are practically the same.

Late First Stage of Change.—By this is meant a more advanced state of the above described changes. In the cells, the nuclei are all more or less swollen and dislocated (axonal reaction), the processes are denuded of Nissl's bodies and almost wholly of the fine deposit derived from them. The periphery of the cells is more rarefied, the central Nissl's bodies are more diaphanous, and from the decrease in their size they appear to be more discretely scattered.

Second Stage of Change.—This change marks, first, a longer action of the beri-beric virus, and, secondly, a reaction as the result of loss of function. The cells are more rarefied, or take on a massive blue colouration; the Nissl's bodies having either disappeared almost entirely or having broken down into a fine powdery but dense mass, which fills the whole cell except the original site of the nucleus. The latter is widely dislocated, even abutting on or being flattened against the cell wall. It also colours more deeply than normal, and is swollen. The terminations of the dependent fibres are in an early and distinct stage of atrophy—Wallerian in appearance.

Third Stage of Change.—By this is meant the vacuolation of the cell, rupture of its membrane and that of its nucleus; sometimes extrusion, either wholly or partially, of the nucleolus, irregular staining of the perikaryon and loss or fragmentation of the processes.

In acute pernicious beri-beri one never sees the second stage of change, but only the early and late first stages of change. In fatal acute beri-beri one sees similar changes. In beri-beric residual paralysis of short duration the second stage of change is chiefly seen. In cases of long duration the second or third stages, but chiefly the latter, are observable. The late first stage of change is also seen in beri-beric residual paralysis, where there is clinical evidence that almost wholly restored neurones have recently broken down as the result of some intercurrent disease or deleterious constitutional condition. The third stage of change in the neurones is sometimes accompanied by evidence of regeneration in a few fibres, and by more or less evidence of interstitial change in the nerve trunks, muscles, posterio-spinal ganglia, ventral horns and posterior columns of the cord.

Methods Used to Determine the Lesions of Beri-beri.

Nervous System.—The encephalon and spinal cord of each case were immersed for twelve hours in 5 per cent. formalin, then in 10 per cent. formalin for twenty-four hours. Pieces from the lower-limb areas and frontal convolutions were then passed into absolute alcohol, and ultimately stained by Nissl's method. The portion adjoining the Sylvian canal and the pons and medulla were likewise treated and stained by Nissl's stain. The spinal cord was carefully divided into its natural segments, and a slice of several cervical, of all thoracic, and of several lumbo-sacral metameres was passed into Müller's, and ultimately stained by Weigert-Pal, Marchi, and van Gieson methods. The remainder of each segment was passed into absolute alcohol and ultimately stained by Nissl's method. The cord and bulb were in most cases removed in their entirety by sawing through the occipital plate of the cranium. The posterior spinal ganglia were nearly all carefully removed, and after the preliminary fixation in formalin they were divided from the cord, and all of the right and every alternate left ganglion passed into absolute alcohol, to be subsequently stained by Nissl's method. The remainder of the left ganglia and the proximal and distal fibres of the great majority of all others were passed into Müller's, and afterwards stained by the Weigert-Pal or Marchi methods. The main nerves to the limbs were carefully dissected out from the plexuses to their terminations in the muscles and skin and, along with a piece of the latter structures, were pinned on sheets of cork and placed in Müller's fluid. Pieces from the proximal and distal portions of each third part were afterwards stained by the Weigert-Pal, Stroebe and Marchi methods. Great care was exercised in the removal of the vagal cardiac fibres. In the great majority of cases the nerves, with portions of the right heart attached, were dissected back to the deep and superficial plexuses and placed in Müller's fluid. When the material had hardened sufficiently the nerve-fibres were dissected to the heart muscle, and, with small portions of the latter still attached, were cut in proper lengths and treated by Marchi's fluid.

Parts of the right auricle and ventricle were preserved in absolute alcohol for the examination of Bidder's and Remak's cells. Marchi's method was used to detect fatty degeneration in the cardiac and other muscles. For general purposes the hæmatoxylin-eosin stain was used. Ganglia of the fifth and seventh pair of cranial nerves, the lower cervical and first and second thoracic sympathetic, the solar and other sympathetic ganglia, were fixed in absolute alcohol, and ultimately stained by Nissl's method. Where embedding was necessary both the paraffin and celloidin methods were employed. All fatal cases of beri-beri were autopsied soon after death, or kept in the refrigerator at a temperature between 23° and 40° F., until they could be autopsied.

EXPERIMENTS RELATIVE TO THE TOXICITY OF THE DISINFECTANT CYLLIN.

By D. Sommerville, B.A., M.D., M.R.C.P., D.P.H.
Lecturer in Public Health, King's College, London.

The following experiments are extracted from a series commenced more than a year ago, with a view to determine whether or not the disinfectant cyllin is toxic when introduced in certain doses into the animal body (1) *via* the alimentary canal, (2) subcutaneously, (3) intraperitoneally, and (4) intravenously.

Cyllin (medical) was used for the feeding experiments, and for the other three forms of administration, cyllin specially prepared for intravenous injection.

Rodents and flesh-feeding animals were used.

Experiment 1.—A guinea-pig weighing 300 grammes was given 5 cc. of a 10 per cent. cyllin (medical) solution in distilled water, through a syringe introduced into the upper part of the œsophagus. For three days the animal was closely observed, and no indication of any disturbance was noted. At the end of this time the dose of 5 cc. was repeated, and the same dose administered at intervals of 4, 7, 7, 7, 2, 2, 3, 7 and 6 days, making in all 55 cc. in 48 days. Throughout this period the animal remained in normal health, as indicated by normal temperature, general appearance, and its feeding vigorously; it gained 5 grammes in weight during the time.

Experiment 2.—A rabbit weighing 900 grammes was given 5 cc. of a 10 per cent. cyllin (medical) by the mouth, three days later 5 cc., and the same dose at intervals of 4 and 7 days. Result—animal remained in good health, normal temperature, fed well, retained its weight.

Experiment 3.—A guinea-pig weighing 250 grammes was fed with a 20 per cent. cyllin (medical) solution, commencing with a dose of 5 cc., and continuing with doses of 3 cc. at intervals of 3, 4, 7, 7, 14, 2, 2, 3, 7, and 6 days, making 35 cc. of this solution in 45 days. The animal's condition remained normal throughout.

Experiment 4.—A guinea-pig weighing 320 grammes was given a 3-minim capsule of cyllin (intestinal) on March 6th; a similar capsule on the 7th; on the 9th a capsule morning and evening; on the 11th a capsule morning and evening; on the 13th and 14th the same dose morning and evening; and on the 16th a capsule in the morning. The animal remained throughout quite normal.

Considering results previously obtained in the disinfection of various intestinal bacteria, with small quantities of cyllin in dilutions of 1 per cent., 0·1 per cent., and 0·05 per cent., the quantities used in these experiments are larger than necessary for thorough disinfection of the alimentary tracts of the animals used. As, however, complete disinfection of the tract is not desirable, inasmuch as it never occurs in health, the intervals of time recorded in Experiments 1, 2, and 3 were allowed in order that the natural intestinal flora might reappear between the successive doses. In Experiment 4, where the intervals are shortened, the results are equally good. No remnants of capsules were found on careful examination of the fæcal matter voided, so that it is reasonable to assume that the contents were effectually liberated inside the bowel.

Experiment 5.—A cat weighing 1,250 grammes was given *per os*, on January 14th, 5 cc. 10 per cent. cyllin (medical), and a like dose on the 17th. A *post-mortem* examination, supplemented by careful microscopic examination of the epithelial tissues of the intestinal wall and kidneys, failed to detect any trace of inflammatory or other change.

Experiment 6.—A cat weighing 1,300 grammes had by the mouth, on January 17th, 5 cc. 20 per cent. cyllin (medical). At the end of seven days, when observations on this animal ceased, nothing abnormal had been noted.

Experiment 7.—A cat, 1,255 grammes, was given 3-minim capsules as follows: One on March 4th, one on the 5th, two on the 6th, two in the morning and two in the evening of the 7th, two in the morning and two in the evening of the 9th, two in the morning and two in the evening of the 10th, two in the morning of the 11th, two in morning and two evening of the 13th, two morning and two evening 14th, two morning and two evening 15th, seven capsules morning of 16th, and six capsules morning of 19th.

This animal remained normal throughout the period of the experiment.

Experiment 8.—A cat, 1,245 grammes, had capsules (3-minim) as follows: One morning, March 6th; one morning and one evening, 7th; one morning and one evening, 9th; one morning and one evening, 10th; one morning, 11th; one morning and one evening, 13th; one morning and one evening, 14th; one morning and one evening, 15th. The continuous administration of capsules in this case produced no abnormal results.

Experiment 9.—A guinea-pig weighing 300 grammes was given 3-minim capsules as follows: One morning, March 6th; one morning and one evening, 7th; one morning and one evening, 9th; one morning and one evening, 10th; one morning, 11th; one morning and one evening, 13th; one morning and one evening, 14th; and one morning and one evening, 15th. These continuous doses produced no abnormal change.

Experiment 10.—A guinea-pig, 250 grammes, was subcutaneously injected, on June 9th, with 2 cc. of a 1 per cent. solution of cyllin specially prepared for intravenous injection. This emulsion is so fine that the individual globules are much less in diameter than

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Colonial Medical Reports—No. 10—GRENADA (*continued*).

MEDICAL REPORT FOR No. 8 DISTRICT.

By H. J. L. BENNETT.

ST. ANDREW'S,
February 20, 1904.

Owing to Dr. Lang's retirement, I was transferred from No. 6 District to No. 8; but did not commence my duties in St. Andrew's until the end of October, when I returned from vacation leave: this report, therefore, deals only with two complete months—November and December, 1903.

Dysentery.—On my arrival I found dysentery very prevalent; but the disease was in a mild form, and the deaths caused by it were chiefly among the aged and very young. Malarial fever cases were also very numerous, as is usual at that season, most of them occuring in the low lands near the sea: the inhabitants about Soubise suffered most.

Heart Disease.—Comparing my present district with my last one, I soon noticed a great difference in the amount of heart disease in the two parishes; I met with many more cases in St. Andrew's than I did in St. Patrick's, and I consider the cause to be the very steep hills which the people have to climb in No. 8 district.

Cancer.—Cancer is another complaint which seems to be very common in this parish, but the increase is probably a general one throughout the island; for this disease is gaining ground in most parts of the world.

Venereal Disease.—All forms of venereal diseases were frequently seen; the fact of Grenville being a "port of entry" explains the mode of introduction of these complaints into St. Andrew's, for seafaring men are not too careful.

Water Supply.—The greater part of No. 8 district is blessed with an excellent water supply, the reservoir is situated on high and isolated land more than four miles from the town, and after passing through filter-beds, the water is distributed by pipes over a large area of the parish.

Yaws.—The disease "yaws" was often met with, but did not appear to be so common as in St. Patrick's; only once during the two months was I asked to treat a case. The peasants still look upon "yaws" as something their children must pass through, like the changing of their teeth.

Sanitary Conditions.—As in other parts of the island, many insanitary conditions flourish in St. Andrew's. Overcrowding in the houses, exclusion of fresh air, burials in private gardens and cocoa fields, improper feeding of infants, careless disposal of night soil, lack of appreciation of the dangerous nature of the sputa and fæces in certain diseases such as consumption and dysentery, and the dirty habits and utter helplessness of the poorer classes when nursing one another in illness.

During the prevalence of dysentery I was astonished to find how scarce milk was in this district. I attribute most of the mortality in the dysentery cases to the want of this indispensable form of food; it is not only scarce, but the small quantity obtainable is generally fraudulently diluted.

Returns for November and December, 1903:—

Free presciptions	290
Payment prescriptions	270
Deferred payment tickets	13
Paupers	72
Labourers	256
Labourers' children	181
Aged labourers	28
Police and prisoners	2
Deaths certified	23
Successful vaccinations	9
Payments per tariff	119
Total attendances	714

MEDICAL REPORT FOR No. 9 DISTRICT.

BY G. N. ALEXIS.

ST. DAVID'S,
January 29, 1904.

I took charge of the district in the month of October. During the earlier part of the year it was under the charge, for varying periods, of Drs. Whiteman, Redhead and Cremona.

Diarrhœa.—On taking over the district I met a rather severe type of diarrhœa prevalent among the children, and a large percentage of those attacked died from asthenia and failure of the circulation. Fatal results in the majority of cases have been brought about by improper feeding and nursing; this is not to be wondered at when it is remembered the important part dietary and hygiene play in the treatment of these cases.

There were no other features worth recording.

MEDICAL REPORT FOR No. 10 DISTRICT FOR THE YEAR 1903.

By DUNBAR HUGHES.

CARRIACOU,
March 12, 1904.

I took charge on October 15th, 1903, and during the preceding months the district was under the care of Dr. G. N. Alexis.

Malarial Fever.—These fevers are always endemic in Carriacou, and during the month of November they assumed a more than usual violence, the type was chiefly remittent, and cerebral symptoms were present in all the more severe cases.

Syphilis.—A few cases of primary syphilis, and in some cases tertiary; prompt and continued treatment, usually in hospital, have tended to lessen the spread of this disease. I have adopted the plan of keeping primary syphilitics under hospital supervision and treatment as long as possible; for to treat these cases as out-patients would not be effective, as the sufferers soon notice improvement and discontinue attending for treatment.

Yaws.—Only three cases of this disease have I met with.

Water.—Notwithstanding the fact that the water supply of Carriacou affords every facility for contamination, yet I am happy to say that there has not been a single case of a purely water-borne disease.

The prevailing diseases have been those of the digestive system. The habitual diet of "cuckoo," and the drinking of a water that holds in suspension much siliceous matter may be responsible for this state of affairs.

Children.—Infant mortality in Carriacou is excessively high, and in 85 per cent. of cases death is referable directly or indirectly to dietetic indiscretions.

Soon after birth the hapless infant begins its digestive career by an attack on a pap made of arrowroot and brown sugar or molasses and of the consistency of very thick starch paste, and before "he" has reached the age of five days "he" has received a "soothing syrup" known locally as "Luck," and composed of castor oil, olive oil, honey, and gin.

After the age of six months it continues its existence on "cuckoo."

Facts such as these speak for themselves, and the helplessness of the infants calls on us to intervene between the ignorant kindness of the mother and the infant's life and comfort.

METEOROLOGICAL RETURN FOR THE YEAR 1903.*

	Temperature						Rainfall		Winds	
	Solar minimum	Solar minimum on grass	Shade maximum	Shade minimum	Range	Mean	Amount in inches	Degree of humidity	General direction	Average force
January	142·6	131·2	82·3	72·5	9·7	·699	5·09	72·2	E.	143
February	144·8	141·0	83·0	72·8	10·2	·716	2·27	73·4	E.	162
March	144·3	135·2	84·3	73·0	11·7	·715	2·48	73·0	E.	127
April	145·5	137·0	86·5	74 6	11·9	·705	0·65	69·4	E.	135
May	142·8	135·0	86·6	75·6	11·0	·721	1·42	69·6	E.	155
June	140·0	133·0	84·5	74·7	9·8	·776	8·73	78·4	E.	134
July	137·7	130·0	83·4	74·3	9·1	·788	10·00	80·2	E.	112
August	139·7	127·2	84·1	74·7	9·4	·791	14·59	78·2	E.	68
September	143·9	135·0	85·4	75·1	10·3	·776	9·51	74·8	E.	72
October	143·6	132·0	84·7	75·1	9·6	·808	9·11	77·6	E.	88
November	146·7	140·4	85·5	74·9	10·6	·794	2·55	76·8	E.	78
December	141·2	126·0	83·6	73·1	10·5	·762	12·49	70·2	E.	107
Averages ..	142·7	133·6	84·5	74·2	10·3	·754	78·89	74·5	E.	115

* At Richmond Hill Meteorological Station in the south of the island.

RETURN OF DISEASES AND DEATHS IN 1903 AT THE FOLLOWING INSTITUTIONS:—

COLONY, YAWS, ST. ANDREW'S, AND CARRIACOU HOSPITALS.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	—	—	—
Anæmia	41	2	44
Anthrax	—	—	—
Beri-beri	—	—	—
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Debility	11	—	12
Delirium Tremens	—	—	—
Dengue	—	—	—
Diabetes Mellitus	1	1	2
Diabetes Insipidus	—	—	—
Diphtheria	—	—	—
Dysentery	25	5	25
Enteric Fever	—	—	—
Erysipelas	—	—	—
Febricula	—	—	
Filariasis	—	—	—
Gonorrhœa	12	—	12
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	2	—	2
Kala-Azar	—	—	—
Leprosy	—	—	—
(*a*) Nodular	—	—	—
(*b*) Anæsthetic	—	—	—
(*c*) Mixed	—	—	—
Malarial Fever—			
(*a*) Intermittent—	11	2	13
Quotidian	—	—	—
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	90	5	90
(*c*) Pernicious	1	—	2
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	
Mumps	—	—	—
New Growths—			
Non-malignant	16	—	16
Malignant	2	—	2
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	—	—	—
Rheumatism	41	—	45
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	—	—	—
Septicæmia	—	—	—
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	—	—	—
Syphilis—	—	—	—
(*a*) Primary	1	—	1
(*b*) Secondary	9	—	10
(*c*) Tertiary	9	—	12
(*d*) Congenital	1	—	1
Tetanus	3	1	3
Trypanosoma Fever	—	—	—
Tubercle—	29	16	36
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	111	1	192
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	27	—	32
Circulatory System—			
(*a*) Valvular Disease of Heart	30	7	33
(*b*) Other Diseases	10	2	11
Digestive System—			
(*a*) Diarrhœa	6	5	7
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	—
Congestion of Liver	2	—	3
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	1		1
(*g*) Cirrhosis of Liver	1	1	1
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	68	1	71
Ear	—	—	—
Eye	—	—	—
Generative System—			
Male Organs	32	1	33
Female Organs	—	—	—
Lymphatic System	17	—	18
Nervous System	25	2	27
Nose	14	—	14
Organs of Locomotion	33	1	33
Respiratory System	24	1	26
Skin—	—	—	—
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	6	—	6
(*f*) Other Diseases	243	5	278
Urinary System	76	11	78
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	45	5	51
Parasites—			
Ascaris lumbricoides	2	—	2
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	—	—	—
Surgical Operations—			
Amputations, Major	—	—	—
,, Minor	—	—	—
Other Operations	—	—	—
Eye	—	—	—
(*a*) Cataract	5	—	6
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	19	—	24

No. 11.—HONG KONG.

REPORT ON THE HEALTH AND SANITARY CONDITION OF THE COLONY OF HONG KONG, FOR THE YEAR 1904.

By J. M. ATKINSON.

Principal Civil Medical Officer.

LAID BEFORE THE LEGISLATIVE COUNCIL BY COMMAND OF HIS EXCELLENCY THE GOVERNOR.

Population.

The estimated population of the Colony for 1904 was 361,206. There were 1,205 births and 6,118 deaths; 495 of these were from plague.

The birth-rate was 3·3 per 1,000, as compared with 3·17 in 1903.

The death-rate was 16·94 per 1,000, as compared with 18·9 in 1903.

The following figures will show the comparison of the death-rate in the Chinese and non-Chinese during the past two years:—

	1903.	1904.
Non-Chinese	16·6 per 1,000	12·48 per 1,000.
Chinese ...	19·1 per 1,000	17·18 per 1,000.

Prevalence of Sickness in the Different Seasons of the Year, and General Character as to the Mildness or Severity of the Diseases Prevailing.

Small-pox.—There were 64 cases notified, as compared with 60 in 1903. The greater number of these, viz., 57, occurred in the first six months of the year; five were imported.

In the month of April handbills were published calling the attention of the Chinese to the fact that the disease was prevalent and free vaccination could be done at the Government Civil, the Alice Memorial and the Tung Wah Hospitals.

Cholera.—A small outbreak occurred during the months of May, June and July in No. 2 Health District, and was confined almost entirely to the coal coolies resident in this neighbourhood; at no time was the disease epidemic.

In all there were 41 cases notified during the year, as compared with 10 in 1903, and 460 in 1902.

Plague.—This disease occurred in a much milder form than usual, 510 cases only being notified, as compared with 1,415 in 1903; this is the fewest number of cases we have had recorded in any one year since 1897.

The diminished prevalence of the disease is especially interesting, as it appears to have been very severe in Canton and the surrounding country; it was especially prevalent in Tong Kun District; at Fu Shan, about 40 miles east of Canton, upwards of a hundred deaths had occurred by the beginning of April, indeed in some of the districts near Canton it was reported as causing more deaths than in any year since 1894. Early in April information was received that the disease was prevalent near Swatow.

As will be seen from the following table, the outbreak commenced in April, it reached its height in June, and a marked decline occurred as soon as the maximum mean daily temperature was reached.

The following table gives the number of cases reported in each month of the last two years:—

	1903.	1904.
January	4	0
February	29	3
March	115	4
April	272	40
May	515	135
June	343	194
July	85	96
August	32	19
September... ...	9	9
October	5	0
November... ...	4	5
December	2	5
	1,415	510

To my mind, one of the most important plague preventive measures is the general cleansing of the Chinese houses, which is now carried out by the inhabitants themselves during the winter months. The fact that we have been able to obtain the co-operation of the people in this way is in a great measure due to the personal interest Sir Henry Blake took in endeavouring to quell the 1903 outbreak.

This commenced in November, 1903, and was finished by the end of February, 1904. During this time over 11,000 houses, containing 34,193 floors, were cleansed by the Chinese, the Sanitary Department supplying the hot water, soft soap, and removing the rubbish at a total cost to the Government of $6,123.

Four days' notice is sent to the occupiers that the time has arrived for their houses to be cleansed, at the end of this time they are visited by the Plague Inspector and if found dirty the sanitary staff take the matter in hand and cleanse the premises.

The Chinese have now come to see the value of this measure, and only in a very few instances did they fail to do it in the allotted time.

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human red blood corpuscles, and so stable that after standing for a month the amount of precipitate was inappreciable. There is no running together of the globules to form larger masses on standing for three months. Added to normal blood, to the extent of 1 per cent., no change in coagulation time was noticed. The same quantity added to serum did not produce coagulation in ten days. No change was noted in red or white blood cells when stained by Jenner's method. The animal was carefully observed for ten days, during which time no abnormal symptom was noted.

Experiment 11.—A guinea-pig weighing 260 grammes had an injection of 2 cc. of a 1 per cent. intravenous cyllin, made with normal saline, thrown into the femoral vein, on June 10th, under strictly aseptic conditions. Nothing abnormal was seen during ten days' careful observation.

Experiment 12.—On June 11th, a guinea-pig weighing 280 grammes had an injection of 4 cc. of a solution similar to the last, thrown into the femoral vein. This animal showed no abnormal symptoms during ten days' observation.

Experiment 13.—On June 20th a dog (medium-sized wire-haired terrier) had 10 cc. of a 10 per cent. intravenous cyllin injected into the femoral vein. During ten days' observation the animal remained in its usual health.

Experiment 14.—On December 14th, a cat weighing 1,300 grammes had 5 cc. of a 2·5 per cent. intravenous cyllin thrown into its femoral vein. During ten days' observation this animal remained quite well.

Experiment 15.—A cat weighing 1,350 grammes had 5 cc. of a 5 per cent. solution of intravenous cyllin injected into the femoral vein on December 15th, and presented no abnormal symptoms in the following ten days.

Experiment 16.—On January 19th, 1905, a cat weighing 1,400 grammes had 2 cc. undiluted intravenous cyllin thrown into its femoral vein. No abnormal symptoms were observed during the succeeding ten days' period of observation.

Experiment 17.—On February 2nd, a cat weighing 1,380 grammes had 2 cc. of the undiluted preparation injected into the femoral vein. This animal presented no abnormal symptoms during the succeeding ten days. The phrase "no abnormal symptom" indicates that the animal's temperature, appetite for food, appearance, and general behaviour remained undisturbed.

It would seem that the cyllin prepared for intravenous injection, when carefully filtered, and of the microscopic characters noted, may with safety be introduced intravenously, and otherwise as above described, into the animals mentioned, and without fear of any toxic symptoms. Its application also to the human subject would seem feasible.

I hope by further experiments to ascertain more intimately the action of this compound on normal blood, and on blood containing living bacteria, especially in relation to coagulation, haemolysis, and bacteriolysis.

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THE

Journal of Tropical Medicine

JULY 1, 1905.

THE MEDICAL MISSIONARY CONFERENCE IN CHINA.

IT is satisfactory to record the success of the medical conference held in Shanghai during February, 1905. Some forty medical men and women assembled for the second of the conferences to be held from time to time under the auspices of the China Medical Missionary Association. Some valuable papers were contributed, but the chief subject of deliberation was that of the medical education of the Chinese.

As a preliminary to the introduction of Western medical teaching in China, it has been found necessary to translate standard works on the several branches of study into Chinese, and the members of the Association are to be congratulated on their strenuous endeavours in that direction. In the March number of the *China Medical Missionary Journal*, P. B. Cousland, M.B., C.M., contributes a paper on "Medical Nomenclature in China," and points out the difficulties to be contended with in preparing books on scientific subjects for a people to whom science and scientific nomenclature is unknown. We know the difficulty the Japanese had in this direction, nor have they yet overcome the disadvantage which their language places them at concerning the adoption of terms which are altogether foreign to their literature, for the Japanese still employ German as their medium

of scientific communication. We hoped for the sake of Chinese cultivation generally that English would have been the vehicle of medical education. With this idea, however, Dr. Cousland, and we presume the Association generally, declares that he has no sympathy, not that he disapproves of Anglo-Chinese medical schools, as in Shanghai and Hong Kong, but he believes a thoroughly good education in medical or in any other branch of science by means of their own language can be given to the Chinese. Dr. Cousland points out that to a Chinaman a Chinese character conveys more than is done by a Western student's vague recollection of the Latin or Greek derivation of a medical term.

Take the new names of the elements, the gases with the gas radical, the metals with the metal, and the earths with the earth radical, and the phonetic parts of the characters conveying either an appropriate meaning, as *light* for *hydrogen* or *yellow* for *chromium*, or *sun* for helium, and only in the case of the rarer elements being reduced nearly to the level of such delightfully simple names as the Western Didymium, Germanium, and Ytterbium. In anatomy the Chinese student is spared the effort of remembering what part is meant when Eustachius' tube or Stenson's duct or Glisson's capsule is quoted, or what disease or symptom—and I am sure I touch a responsive cord here—is to be understood when the revered names of Hodgkin, Addison, Graves, Friedreich, Paget, Rokitansky, Rosenbach, Well, Werlhoff, and others whose names I am afraid to undertake in public, not to mention thirty saints from St. Agatha.

Some argue that the direction being taken is perhaps not the right one, and contend that the result will be to give China a nomenclature of scientific terms wholly distinct from, and incomprehensible to, scientific men of any other country. This may be a disadvantage, and perhaps wholly unnecessary, for all Asiatics:—Turks, Armenians, Arabs, Hindoos, Bengalees, Parsees, Chinese in the Straits Settlements and Hong Kong, Annumese, Javanese and Japanese have, although in some instances their medical education is not far advanced, adopted a European scientific language, be it English, Dutch, German or French, as the medium of instruction. The Chinaman alone is to be trained upon different lines, and the possibility of the development of a "pidgeon" scientific language is not one to be welcomed, seeing that it would place China at a disadvantage in the field of scientific literature. However, the matter resolves itself into this. How can the Chinese acquire most readily scientific instruction in any science? If by translations of scientific works into their own language, even with a nomenclature to some extent different from accepted standards, then it is perhaps right and beneficial for the advance of China that it should be so. It is the immediate good of China and the Chinese one has to think of, and there can be no doubt that a book in their own language will not only allow them to acquire instruction more quickly, but will appeal to them in a way no foreign language ever can.

We notice also several papers were read at the conference upon opium and its abuses. We had hoped to see a definite resolution put and adopted by the conference. We have from time to time incurred in this Journal the displeasure of many right-minded men for the way we have spoken of those who attack the opium question in China. It is the way the attack is made, not the attack itself, which can be taken exception to. It is the wholesale abuse of a body of honourable men, the highest in the land, against whom no question of deceit, trickery or duplicity in other phases of governmental work is even whispered, that prevents the whole nation as one people joining in the anti-opium cry and condemning the importation of opium into China from India. We hope soon to hear that the Chinese Government will, by an official and direct communication to the British Government, request that the importation from India to China shall cease. Since Japan attained her place amongst the first powers of the world, China holds a very different position now compared to a few years ago, and their requests will be listened to as they have never been before. When the request is made then is the time, for those who wish to see the end of the opium trade, to do their utmost to see that public opinion declares itself in the matter in decided terms. A resolution framed by the members of the Conference and forwarded to the Chinese Government might have helped to bring about that desirable end.

COLONIAL CIVIL SERVICE.

Mr. W. Rees Davies, King's Advocate of Cyprus, has arrived in England on leave, during which Mr. Stanley Fisher, President of the District Court of Kyrenia, will act as King's Advocate.

Mr. A. N. Galbraith has been selected for the office of Assistant to the Government Agent of the Eastern Province of Ceylon and additional Police Magistrate of Batticaloa.

Dr. C. Simson has taken over the duties of Acting Medical Officer at Port Moresby, British New Guinea.

Mr. John Maxwell, District Commissioner of the Gold Coast Colony, takes the place of Mr. T. E. Fell, who has been promoted, as a Travelling Commissioner of the Native Affairs Department of the Gold Coast.

Mr. C. Spencer, Inspector in charge of the Papho Police, Cyprus, acts as Commissioner of the Papho District during the absence on leave of Mr. C. W. Wodehouse.

Mr. J. H. Kleinschmidt has been appointed Chief Inspector of Schools in Natal.

Mr. J. H. Leak succeeds Mr. B. J. Dutton as Police Magistrate of Jaffna, Ceylon. Mr. Dutton has been transferred to Anuradhapura in a similar capacity.

Mr. Walter Egerton, C.M.G., Governor of Lagos and High Commissioner of Southern Nigeria, will arrive in England next month on leave of absence.

Dr. J. E. Duerden, formerly Curator of the Institute of Jamaica, has been appointed Professor of Zoology at the Rhodes University College, Grahamstown, Cape Colony.

Mr. Cecil Clementi, Assistant Registrar General, Hong Kong, becomes Assistant Land Officer for the New Territories, and exercises the jurisdiction of a Police Magistrate within the Territories.

A VISIT TO THE PASTEUR INSTITUTE IN PARIS.

By Harold Hamel Smith,
Editor of "Tropical Life."

Since the present buildings of the Pasteur Institute arose in the Rue Vaugirard in Paris, it has been my ambition to visit that most fascinating of institutions. Chance at last enabled me to satisfy my wish, and, what is more, I had the good fortune to have Drs. Roux and Laveran to explain the principle of their methods of working and to act as cicerones.

Of course, not being a medical man I can give no scientific idea of the advantages such an institution bestows on mankind, though as I listened to the explanations I could fully realise them myself. After I had been received by and introduced to Dr. Roux, Professor Laveran explained the maladies caused by tropical insects (which concerned me the most), such as mosquitoes, &c., and pointed out to me the fine miscroscopes and slides they had round the lecture-room. That finished, I was conducted by Dr. Roux to what seemed to me a very touching part of the Institute, that is, the great marble tomb of Pasteur in the underground chapel, where it rests with the precious remains committed to its charge in the centre of the spot where the living man laboured so marvellously. Then we passed again through the beautiful hand-beaten iron gates that shut in the chapel, and visited laboratories, private experimenting rooms and wards, inspecting the machinery and larger apparatus, which is very interesting, as we passed up and down the staircases of the two buildings composing the Institute that face each other across the road.

Besides those actually engaged in the Institute itself, it seems that anyone making experiments, or trying to discover or isolate a new serum or bacillus, not only can have the room and apparatus of the Institute to make use of, but can even have private rooms of their own under lock and key to work in until they attain their end, and can make known to the world the new discovery they have made.

Whether the isolation wards that I next visited fulfil all that is claimed or expected of them, I am not capable of saying, but I can say I found them most beautifully kept in every way. They have a specially made porcelain lining to about four feet high, and from that to the lofty ceiling it is glass on all sides, set in iron casements and iron-frame doors, so that they look like greenhouses, and unless the patients are reclining on their beds they can see into each other's rooms, out of doors, or into the passage.

One of the great points in these wards is that they are absolutely infection-proof, so beautifully are the doors and other fittings made to make sure of the isolation being reliable. Each room is provided with all the necessary conveniences the patient needs, including a sink and taps, and all nooks and corners are rounded, as well as the bottoms of the walls where they run into the floor, so that it is impossible for any dust, or, worse still, any microbes to remain. All kinds of infectious diseases arising from germs are thus able to be detained and placed under observation and treatment until the patient is cured, without any fear of one patient's infection being communicated to another. Each ward, too, has a door leading down to its little garden where the patient can, when well enough, take a constitutional.

New wards are being built to cope with the demand for more accommodation, and so we could enter and examine the beautiful glazed surface of the large slabs that run along the lower part of the wall to about four feet high to give the privacy between the wards, and also noticed how highly everything fitted and yet worked beautifully. Then we came to the entrance from the outer world, by which cases come in and are at once isolated in separate little rooms until the doctor can examine them, and either pass them on into the Institute or out again into the street. Here, too, I bid good-bye to Dr. Roux, and concluded what had been to me a most fascinating afternoon's visit.

Reviews.

Snake Poisons. Vital, Brazil. Maloine, Paris.

The Director of the Pasteur Institute of Sao Paulo describes the poisonous snake of South America, and the effects on man and animals, showing how in some cases the nervous system is more particularly affected. The venins differ from those of Indian snakes, an important fact to bear in mind when using serum treatment for snake-bite. This most important work on the poisonous snakes of the New World concludes with directions as to the modes of collecting snake poi on and the preparation of serums.

A Monograph of the Anopheles Mosquitoes of India. By S. P. James, M.B., I.M.S., and W. Glen Liston, M.D., I.M.S. Thacker, Spink and Co., Calcutta, and W. Thacker and Co., 2, Creed Lane, London, E.C. 1904. 132 pp. Illustrated. Price 24s. net.

This book is so clearly written, so excellently illustrated, and so well printed, that we have no criticism except of a favourable nature to offer. The authors' names are sufficient to commend the book to every one interested in the subject of malaria-bearing Anopheles, their anatomy, classification, and their habits. Part I. consists of four chapters. Chapter I. is devoted to "a general account of mosquitoes," and is admirably written. Chapter II. deals with the collection, mounting, examination, and identification of Anopheles mosquitoes and their larvæ. In Chapters III. and IV. are described the habits and classification of Anopheles respectively. Part II. contains "Systematic descriptions of the Anopheles mosquitoes found in India."

In the preface the authors draw attention to the fact that they have not followed Mr. Theobald's new classification of Anopheles, but we are glad to note that they have added under the title of each mosquito described the genuine and specific names by which insects are known to him.

The illustrations in the text are exquisite, and the

diagrams and drawings by D. A. Turkhud, M.B., of Bombay, are at once teaching and artistic. This book will no doubt be found in every library, public and private.

Notes and News.

THE American Microscopical Society meets at Cedar Point, near Sandusky, Ohio, on July 5th, 6th, and 7th. An especial feature of the meeting will be the papers and discussions on medical zoology. The President, Dr. Henry B. Ward, will open the scientific sessions by an address upon the "Relation of Animals to Disease." One day will be devoted to a symposium with demonstrations on animal parasites and their effects on their hosts.

[We regret that this notice arrived too late for insertion in our last issue.—ED. *J. T. M.*]

SIR ALFRED JONES, K.C.M.G., has increased his subscription to the Colonial Nursing Association from £50 to £250. It is to be hoped the example set by Sir Alfred will be followed by others, in order that this excellent Association may not be hampered in its work by want of funds.

LATENT PLAGUE.—The statement made by Sir Henry Blake, Governor of Hong Kong, that some thousands of Chinese in Hong Kong, between June 23rd and July 10th, 1903, had plague bacilli in their blood although all clinical symptoms were absent has been refuted by subsequent observations. The investigations conducted in Manila by Herzog and Hare serve also to show that the existence of latent plague in human beings does not occur.

IN Rangoon during March 50,000 rats were killed as a plague prophylactic.

A SIMPLE method of preventing ankylostomal infection by way of the soil is described by Sir Patrick Manson: A West Indian sugar-planter encouraged his coolies to dip their feet and legs in green Barbadoes tar and then tread on fine sand. An impervious covering to the skin of the lower extremities was thus obtained.

Plague.

PREVALENCE OF THE DISEASE.

India.—During the weeks ending May 13th, 20th, 27th, and June 3rd, the deaths from plague numbered 42,003, 35,492, 23,038, and 15,317.

South Africa.—During the weeks ending May 13th, 20th, 27th, and June 3rd, the reports were: *East London:* Fresh cases, 8, 0, 3, and 1; deaths, 1, 1, 1 and 1. *King William's Town:* Fresh cases, 0, 3, 1 and 0; deaths, 0. *Queenstown:* Fresh cases, 1, 0, 3 and 0; deaths, 1, 0, 1 and 1.

Mauritius.—No cases from March 16th to first week in June. Weeks ending June 8, 15th, and 24th, fresh cases, 1, 4 and 3; deaths, 0, 3 and 2.

Hong Kong.—During the weeks ending May 27th, June 3rd, 10th and 17th, fresh cases, 20, 21, 21 and 25; deaths, 19, 19, 21 and 26.

Queensland: Ipswich.—During week ending June 13th, fresh cases, 7; deaths, 1; last reported case May 8th.

Egypt: Tukh District.—During weeks ending April 22nd and 29th, fresh cases, 0 and 2; deaths, 1 and 0.

Formosa.—Between April 20th and 30th, fresh cases, 238; deaths, 210.

England: Manchester.—A death from plague occurred in Manchester on June 13th. The patient had arrived on board ship at Middlesborough, *via* Hamburg, from Buenos Ayres, and on reaching his home in Manchester on June 10th, developed plague and died in a couple of days.

Scotland: Leith.—On May 5th a case of plague occurred at Leith; on May 8th and 10th, 1 and 2 additional cases were reported. The cases were all from one house, and consisted of the father, mother, and two of their children. Source of infection uncertain.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Tuberculosis Amongst Negroes.

In New York negroes suffer extensively from tuberculosis. The alleged cause is overcrowding and insanitary dwellings. Steps are being taken to deal with the matter.

Cerebro-spinal Meningitis in Germany.

During April 1,200 cases of cerebro-spinal meningitis occurred in Upper Silesia; about half the number died. In Berlin three cases of the disease were reported on April 5.

Yellow Fever.

Panama.—Between January 1st and April 29th, 1905, the cases of yellow fever amounted to 50, and the deaths from the disease numbered 20. The disease broke out in virulent form in the Government buildings, which are old and insanitary, the victims being clerks in official employ. Gorgas, the Governor, reported on May 12th that no new cases had occurred for nine days, but between that and May 18th six additional cases of yellow fever were reported.

Uncinariasis in Porto Rico.

Medical Record, May 20, 1905. (Leader.)—The Report of the Commission, consisting of Drs. B. K. Ashford, W. W. King, and P. G. Igaravillez, for the Study and Treatment of Anæmia in Porto Rico, published by the U.S.A. Government, states that: (1) The anæmia is due to the presence of the *Uncinaria*

Americana in the human intestine; (2) the parasite *U. Americana* differs from the *U. duodenalis* (*a*) in the nature of the buccal armature of the parasite, and (*b*) in the size of the ova. Of 5,500 cases of anæmia examined, 5,490 were due to uncinariasis; and of this number thirteen died. As pollution of the soil is recognised as the chief medium of infection, and as the larvæ may enter by the mouth or by the skin, the prophylaxis required is devoted to (*a*) general cleanliness and careful washing of the hands before eating; (*b*) the provision of suitable latrines to prevent the fæces polluting the soil broadcast; (*c*) wearing shoes to prevent the larvæ gaining access by way of the skin of the feet.

Nutmeg Poisoning.

Laurie, H. (*Australian Medical Gazette*, April 20th, 1905), records a case of poisoning due to a woman having grated four nutmegs into a cup of hot water, and drinking the whole quantity before going to bed. Some five hours afterwards Laurie found the patient almost unconscious; skin moist and cold, pupils dilated, pulse 156, feeble with occasional irregularity, respirations shallow and occasional sighing. Strychnine gr. $\frac{1}{40}$ was given hypodermically, a mustard leaf applied over the heart, warmth applied to the body, and as soon as possible a large dose of castor oil was administered. The patient made a good recovery. The woman had taken the nutmeg as her periods had not appeared; she was found to be pregnant, but the nutmeg proved useless as an abortifacient. The official dose of nutmeg is 5 to 15 grains, so that the woman had taken at least twenty times the officinal dose.

Can practitioners in the Tropics give any account of nutmeg as a drug in the treatment of disease, or of its use as a means of procuring abortion amongst natives of the Tropics?

New Drugs.

PETROBROSE.—This combination of barley proteids with a hydrocarbon oil contains the diastatic ferment of malt, phosphates, hypo-phosphites, albumen and albumenoids. We have taken pains to ascertain the genuine quality of Petrobrose, and can vouch for its purity and for the care and attention paid to its preparation.

Petrobrose is free from the smell so frequently associated with petroleum compounds, and is most agreeable to the taste.

For chronic intestinal ailments, more particularly chronic dysentery and sprue, Petrobrose lays claim to be of especial use. We have tried Petrobrose for both chronic dysentery and sprue, and find that it is well tolerated by patients suffering from these diseases, serving to allay intestinal irritation, soothe the bowel, and create a healthy tone to the digestive system.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Revista Medica de S. Paulo," March 31, 1905.

Comment on meurt de la fiévre jaune. (Modes of Death in Yellow Fever). By Dr. C. Mauro.

Dr. Mauro states that we have almost complete studies on the mechanism of death in several diseases, but, so far as he is aware, none with reference to yellow fever; for this reason he describes with much detail a series of eighteen typical cases of this disease, which he selects from amongst the many of which he took full notes during the epidemic which raged at Ribeirão Preto in 1903.

The description usually given of yellow fever, with its three periods, with its numerous clinical forms, amongst which many authors have wandered and strayed, show how far we are still from an accurate knowledge of this scourge.

The description of its clinical forms—when this is not based on a pathogenic interpretation, but represents rather a more or less extensive method of cataloguing—is thoroughly useless, not to say impossible, for no other acute disease exists of which it may be said as of yellow fever, that each case is a new revelation of the disease, or that each patient has a nosological personality so peculiarly his own.

Neither does the description of the so-called classical form answer in the great majority of cases, nor can it bear even the most superficial criticism. In the present state of our knowledge, we must regard yellow fever as a general infection with special local affection of the hepatic glandular structures, which presents itself clinically as an acute pyrexia with a cycle of three to four days. This is how it can be seen in its pure form. But three factors may affect this appearance, viz., the soil on which the yellow fever infection is grafted, the severity of the hepatic lesions, and the superadded infections and intoxications.

In yellow fever there is a vulnerability more or less accentuated, not only according to race, age, &c., but also appreciable differences may be seen in different individuals. Neither can it be denied that it has an elective affinity for the hepatic gland, but a discussion on this point would here be out of place. In each case it is noticeable that alcoholism markedly aggravates the infection, that preceding morbid conditions of the kidneys favour renal complications, that over-indulgence, neuroses, &c., favour the determination of nervous symptoms, &c.

Yellow fever, being a toxi-infection with special local action on the liver, the inability of this organ to fulfil its functions is a constant feature of the disease; in fact, all things being equal, it may be stated that it is the extent of the hepatic lesions which influences the progress and the phenomena observed in yellow fever. When the lesion is not severe and the restoration to a normal state can be rapidly restored, the

pure form of yellow fever exists (an acute pyrexia which completes its cycle in three to four days, or the so-called *abortive* form). When the hepatic cells have been more severely affected, the greater form of hepatic insufficiency is established, but merely as an epiphenomenon of yellow fever. But if the liver is very seriously attacked the symptoms of hepatic obstruction are superadded to those of the yellow fever, and the fulminating form is to be seen. The list of symptoms of yellow fever may also be modified or complicated in addition by other infections and intoxications, and indeed, these are rarely wanting, as may be proved by an examination of the blood.

* * * *

Dr. Mauro states that death occurs in yellow fever in one of the following methods: By the severity of the intoxication, the effect being severe and irremediable as regards all the elements of the organism; by the insufficiency of an organ or of a system which has become vulnerable by a peculiar state of morbid receptivity; by a complication nearly always allied to a superadded infection.

A. Superacute toxæmia.
B. Incompetence of the nervous system.
C. Cardiac incompetence { *a* Progressive exhaustion. *b* Acute syncope.
D. Renal incompetence.
E. Hepatic incompetence { *a* Hæmorrhagic form. *b* Nervous form.
F. Complications ... { *a* Intestinal infection. *b* Parotitis. *c* Meningitis (in children). *d* Septic accidents. *e* Acute atrophy of the liver.

A series of eighteen typical cases are then quoted at some considerable length in order to illustrate the various forms of death shown under these various headings.

J. E. N.

"L'Echo Medical du Nord," April 2, 1905.

Ankylostomiasis. A. Calmette and M. Breton.

In Westphalia the miners are admitted to hospital on Monday, in the evening being given 0·25 grams (4 grains) of jalap and the same amount of calomel. On Tuesday morning they get 8 grams (2 drams) ethereal extract of male fern and 20 grams (5 drams) syrup of senna; and a light meal. On Wednesday evening and again on Friday evening the treatment is repeated; the patients being discharged on Saturday evening, and have a four days' rest on full wages.

The worms are completely expelled in 80 per cent. of cases. The dejecta are examined daily for three days; if no eggs are found a certificate is given, but if they are found the miners are only allowed to work above ground, and have to return for treatment in a fortnight or three weeks.

While in hospital the miners receive full wages; half of it is paid by their union, mine-owners paying the other half. All hospital expenses, including medical expenses, are paid by the union.

In Belgium the treatment is less severe, but hardly as efficacious. The first day a purgative dose of castor oil or compound tincture of jalap is given. Next day 4 grams (1 dram) of extract of male fern and 2 grams (½ dram) of chloroform is administered in divided doses at an interval of half an hour. Two hours after 200 grams (6¼ ounces) of chloroform water are taken. This is again followed in two hours by compound tincture of jalap 20 grams (5 drams), with an equal quantity of syrupus rhamni. The treatment is recommenced on the fourth day, the patient leaving hospital on the evening of the sixth day.

Successful treatment depends on the freshness of the ethereal extract of male fern. In large doses—15-20 grams (4-5 drams)—it may cause disturbance of sight, faintness, headache and temporary albuminuria; this is avoided by giving the drug in divided doses, combined with a purgative such as castor oil. Out of 19,000 miners treated in Germany the sight was only affected three times, twice being in cases of marked anæmia.

Thymol (syr acid. thymic.) is chiefly relied upon in Italy, England, and America. It is given in 4 to 8 gram (1-2 drams) doses in cachets or capsules; sometimes even 15 grams (3¾ drams) are given. The treatment consists of rigorous milk diet for a day, with in the evening a purgative of 0·50 gram (8 grains) of calomel, combined with 0·25 gram (4 grains) of jalap, or 2 grams (½ dram) of powdered senna. Next morning 2 grams (½ dram) of thymol is given every two hours, three or four times; each dose being followed by a cupful of warm mucilaginous drink, as barley water or rice water. At mid-day, clear soup, milk, or coffee is given. It is necessary to avoid oil as a purgative or in any other way, chloroform water, glycerine or ether, and, above all things, any form of alcohol. Toxic effects are lowering of the temperature, slowing of the pulse and respiration, collapse and delirum. The patient has a burning sensation in the pit of the stomach, which is relieved by sipping cold or iced water.

T. P. B.

"Archiv. f. Derm. u. Syph.," September, 1903.

Pathology of Madura Foot. M. Oppenheim.

Histologically the black and yellow varieties of the disease, as shown by specimens obtained from Bombay, are indistinguishable. Both are granulomata made up of round cells, epithelioid cells, plasma cells, and giant cells. Both tend to abscess formation and necrosis, though the black variety is more apt to form abscesses and to liquefy than the yellow, which has a greater tendency to form new connective tissue. Hyaline degeneration is absent in the black variety, but present in the yellow. Great difference exists in the fungus present; for in the black variety it is of the nature of an oïdium, while in the yellow it is closely allied to the actinomyces.

T. P. B.

"Gazette des Hoptiaux," p. 1447, 1904.

ELEPHANTIASIS.

The theories prevalent regarding elephantiasis may be arranged into:—

(1) The parasitic theory. A parasite is present in the blood or lymphatics.

(2) The mechanical theory. A stasis in the blood-vessels or lymphatics.

(3) The infectious theory.

In regard to the *parasitic* theory the writer in the Gazette is of opinion that it has not been scientifically demonstrated that the elephantiasis of warm countries is due to filariasis. The *mechanical* theory of prolonged blood stasis will not account for interstitial thickening of the tissues unless accompanied by an inflammation. The *infectious* theory is supported by Achaline, who considers the conditions to be due to the streptococcus of erysipelas; but these cannot be considered to be the prime cause of elephantiasis. The only factor common to all forms of elephantiasis is inflammation, whether arising from a phlebitis, exogenous infection, or from endogenous thickening, caused by swarms of round cells grouped around the capillary vessels.

The writer in the Gazette holds that all we know of the pathology of elephantiasis resolves itself into a condition of the parts due to interstitial hyperplasia of the skin, brought about by an inflammatory œdema, the active etiological factor being unknown.

"Presse Médicale," Paris, November 19, 1905.

L'Habitation Coloniale. By J. D'Anfreville.

The authorities in Senegal have directed that before the plans of a new dwelling house are passed a medical expert on hygiene must be consulted. D'Anfreville is of opinion that certain well-considered plans should be followed when a house is about to be built in a tropical country. (1) The dwelling house should be apart from the kitchen and outhouses. (2) The house should be of a single storey, rectangular in shape, and the partitions between the rooms should run parallel to each other from front to back of the house. (3) The doors opening on the verandah surrounding the house should be opposite each other in each room, and, in addition, there ought to be a door at each end of the house and opposite the doors in the partitions, so that air can sweep right through the house from front to back and from end to end.

American Medicine, June 3, 1905.

Malarial Infection Presenting Symptoms of Multiple Neuritis. By G. E. Price, M.D.

Price relates the case of a young girl who, after malarial infection, showed symptoms of multiple neuritis for eighteen months. The patient suffered pain, abnormal sensations, diminished muscular power with hand tremors, foot-drop, intermittent fever, and the æstivo-autumnal parasite in the blood. Quinine effected a cure.

Zeitschrift für Klinische Medizin, Berlin, Vol. lvi., Nos. 5, 6.

Zur Kenntniss der Sporadischen Einheimischen Dysenterie. By A. Albu.

Albu describes a case of acute dysentery in a woman who had returned to Berlin after a visit to Silesia and Breslau. *Post mortem*, the intestines presented the characteristic appearances of tropical dysentery. The *Amœba dysenteriæ* (Schaudin's histolytic amœba) was cultivated from the stools.

Spolia Zeylanica, vol. ii., Part viii., March, 1905.

1. *Cysticercus cellulosæ* in a Tamil. By A. J. Chalmers, M.D., F.R.C.S.

2. Anophelinæ found in Ceylon. By A. J. Chalmers.

(1) Chalmers describes a case of *Cysticercus cellulosæ* in a Tamil woman, and remarks that so far as can be ascertained the parasite has never been met with before in Ceylon. The patient, aged 40, died of obscure symptoms, and at the *post mortem* well-developed cysticerci were found in both pictoralis major and in the brain, in the grey matter of the cortex, in the choroid plexus, in the third ventricle, in the brachium conjunctivium, and in the pons.

The tape-worms known to affect man in Ceylon are *Tænia solium* and *Tænia saginata*. No tape-worms were found in the intestine of the Tamil woman examined by Dr. Chalmers.

(2) LIST OF SPECIES FOUND IN CEYLON.

I have recognised the following species of the *Anophelinæ* in Ceylon, and Mr. Green, of Peradeniya, has found one species, *Nyssorhynchus maculatus*, which I have not found, but which is included to make the list complete. The names are those given in Theobald's Monograph on the Culicidæ of the World, vol. iii.

(1) Genus *Myzomyia* (Blanchard): Species 1: *Myzomyia Rossii* (Giles). Species 2: *Myzomyia culicifacies* (Giles). Species 3: *Myzomyia Listoni* (Liston).

(2) Genus *Myzorhynchus* (Blanchard): Species 4: *Myzorhynchus barbirostris* (Van der Wulp).

(3) Genus *Nyssorhynchus* (Blanchard): Species 5: *Nyssorhynchus maculipalpis* (Giles). Species 6: *Nyssorhynchus fuliginosus* (Giles). Species 7: *Nyssorhynchus Theobaldi* (Giles). Species 8: *Nyssorhynchus maculatus*, found by Mr. E. E. Green.

(4) Genus *Pyretophorus* (Blanchard): Species 9: *Phritophorus jeyporensis* (Theobald).

(5) Genus *Cellia* (Theobald): Species 10: *Cellia argyrotarsis* (Robineau-Desveidy).

The most common are the *Myzomyia Rossii*, *Myzomyia culicifacies*, *Myzorhynchus barbirostris*. The *Anophelinæ* found in Ceylon are the same species as those found by Stevens, Christophers, James, and others in India, and are different from those of Africa and America.

A doubtful species is noted, *Nyssorhynchus Jamesii*, by Dr. Philip, from Mutwal, Colombo, named from a damaged specimen.

"The China Medical Missionary Journal," October, 1904.

1. Inherited Syphilis in Hankow.

2. *Ankylostomum Duodenale* at Chang-Teh, Hunan.

3. Leprosy in Hangchow, Fokien.

(1) S. R. Hodge remarks that in hospital practice inherited syphilis occurs in about the same propor-

tion as in Britain. In China the conditions of life favour the operation of the law of the survival of the fittest which works unhindered.

Severe cases of epiphysitis with subsequent pyæmia and brain trouble, succumb early, and the children are not seen at hospital; many, too, fall victims later on to general marasmus. Enlargement of the spleen is frequent in the hereditary syphilis of childhood, and may cause a considerable abdominal tumour. The liver, too, is frequently enlarged, so that the clinical signs and symptoms of chronic malaria are present, and may lead to confusion.

(2) O. T. Logan, writing from the central Chinese province of Hunan, mentions the fact that patients with ankylostoma eggs in their faeces are not an uncommon occurrence in that district. Dr. Logan recommends Jenner's solution as a means of staining the ova of the ankylostomum.

(3) In the large city of Hangchow a leper settlement has recently been provided outside the city which affords work for the lepers, such as fishing and gardening, and the general comfort of the lepers has been greatly improved thereby. In regard to the cause of leprosy it is noted that in this district salt is dear and most of the fish is sun-cured, and as the climate is hot and putrefaction speedy, all the conditions favouring Mr. Hutchinson's theory are present. Contagion is unknown; attendants do not contract leprosy, husband and wife seldom suffer at the same time, and two cases in one family are quite exceptional.

"Presse Médicale," January 14, 1905.

Treatment of Tropical Ulcers.

Fontoynonta Jourdan, in Madagascar, irrigates the ulcers with a 5 per cent. watery solution of eosin, and exposes them to the action of the sun during the day, using an ordinary dressing at night.

In Europeans the parts adjacent to the sore must be protected by an opaque dressing.

Almost as good results have been attained by exposing the sore to the sun's action without using eosin.

T. P. B.

"Le Caducée," March 18, 1905.

Prevention and Cure of Beri-beri.

Dr. J. Hulshoff Pal has investigated the action of the fruit of *Phaseolus radiatus*, called by the Malays *katjang-ido*, and finds that it is beneficial in cases of recent beri-beri, but not when there is degeneration of the peripheral nerves; it causes albuminuria and œdema to disappear. It begins to act on the fifth day, and is a certain prophylactic, but its administration must be continued in doses of 150 grammes. Water does not absorb the active principle.

T. P. B.

"Lancet-Clinic," Cincinnati, Ohio, May 20, 1905.

Treatment of Spotted Fever. By P. M. Ashburn.

Ashburn recommends for spotted fever the Brand treatment of typhoid, with, in addition, the occasional use of normal salt infusions and such drugs as calomel, alcohol and strychnine. Immersed in a bath of 73° F., friction is applied to the body and limbs, with cold applications to the head, repeating the treatment every three hours for from ten to twenty minutes at a time so long as the temperature remains above the normal.

Yellow Fever.

British Honduras: Belize.—May 25th to June 4th, fresh cases, 4; deaths, 4.

Honduras: Puerto Cortez.—May 25th to 29th, fresh cases, 5; deaths, 3.

Mexico: Tierra Blanca.—May 14th to 20th, fresh cases, 0; deaths, 1.

Panama.—January 1st to May 13th, fresh cases, 63; deaths, 22.

EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Medicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate, Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular. West Africa.

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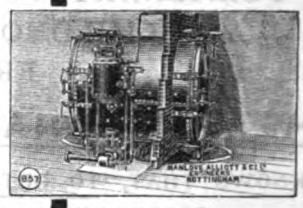
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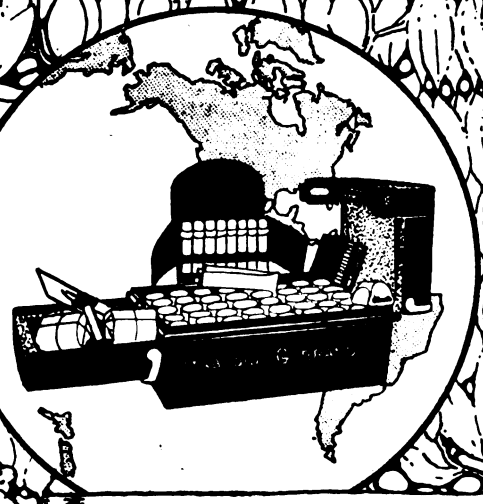
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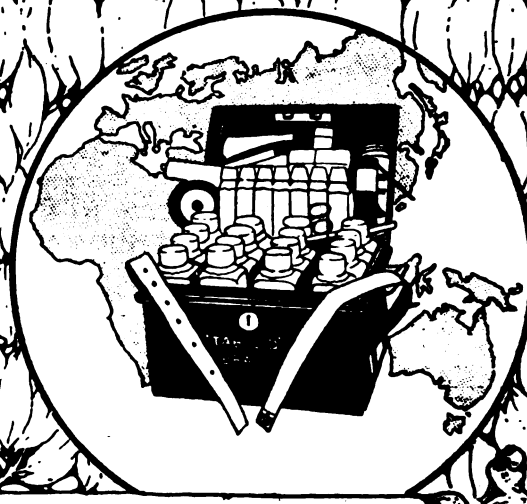
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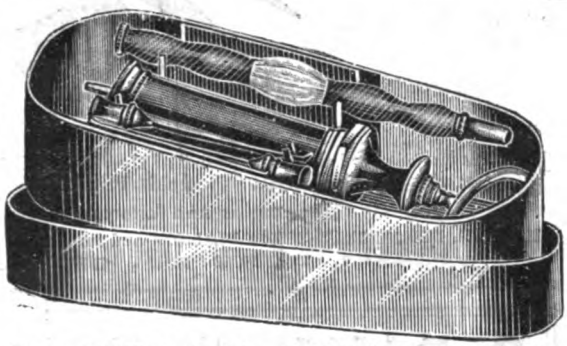
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ON A POSSIBLE MODE OF COMMUNICATION OF LEPROSY.[1]

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for the last few years since I have had charge of the Pulau Jerajak Leper Asylum in Penang, where we have over 300 lepers, been looking for some way in which the leper bacillus could have a favourable chance of transference and growth.

[1] Read before the Penang Division of the British Medical Association, June 2nd, 1905.

Itch Insect the Possible Carrier of Leprosy.

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JL APPLICATION OF PRE- URES AGAINST BERI-BERI.

WRIGHT, M.D., C.M.(McGill).
stitute for Medical Research, Federated Malay States.

ABSTRACT IV.

Hygiene, vol. v., No. 2, April, 1905.)

BERI-BERI is an acute infectious disease with a definite primary lesion.

The reasons which led me to this conclusion are: (1) That the disease begins after an incubation period of ten to twenty days, with more or less marked symptoms of gastro-duodenal irritation, often diagnosed as simple indigestion; (2) that the gastro-duodenal syndrome is accompanied or soon followed by various

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Original Communications.

ON A POSSIBLE MODE OF COMMUNICATION OF LEPROSY.[1]

By T. C. Mugliston, M.D.

Colonial Surgeon, Penang.

I bring forward these few ideas with considerable diffidence, and solely with the hope that the attention of others dealing with large masses of lepers may have their attention directed towards what, I suggest, is a plausible cause of the propagation of leprosy; and that in dealing with the variety of causes, strenuously urged by eminent authorities, my imperfect ideas may be given a small place in their researches.

In investigating the origin of a disease, I think it is logical to search for the primal cause of the disease, and if such be discernible to follow its action.

In leprosy we have in all types but one kind of bacillus and we may accept this as the primal cause of the disease, similarly to the way we accept the tubercle bacillus (from which it is difficult to differentiate it) as the primal cause of tubercle of the lungs, &c.

This being accepted, we have to enquire how this primal cause is introduced into the tissues.

We all know that the microbes of different diseases have different degrees of readiness of introduction. Thus, for example, the anthrax bacillus is welcomed with avidity by any absorbing surface, whereas that of tubercle is more difficult of transference. Whether this is due to increased vigour of the bacillus itself, or to less resistance through some hereditary predisposition of the part attacked or not, there are various opinions,

I have always looked on leprosy as one of the more difficult diseases to communicate.

We see healthy attendants living in close communion with lepers for years without contracting the disease, in a way that would not be possible say in the case of patients suffering from tubercle of the lungs.

I have known a dresser contract the disease in a leper hospital, but this is rare, and what I am coming to may explain it.

If we accept this difficulty of communication as a fact, we have to look further for the cause than the casual touching of an absorbing sore on an attendant's hand by the discharges from a leprous sore. We must look for some instance where the leprous bacillus is kept in apposition with an absorbing surface for a much longer period than the above, and where it will be under more favourable conditions for growth than on the hands of an attendant or dresser who understands the importance of cleanliness.

I have for many years, both when in charge of the male and female leper hospitals in Singapore, and for the last few years since I have had charge of the Pulau Jerajak Leper Asylum in Penang, where we have over 300 lepers, been looking for some way in which the leper bacillus could have a favourable chance of transference and growth.

[1] Read before the Penang Division of the British Medical Association, June 2nd, 1905.

Itch Insect the Possible Carrier of Leprosy.

I have for many years noted the almost universal occurrence of itch in lepers, but I fear that, until a few years ago, I only looked on this as one of the dirt conditions which might be expected in those who have little to look forward to in life, and so get careless of their surroundings. In connection with this I have found that of 400 patients in the Pauper Hospital, twenty-five have itch.

Later, as I began to recognise from various facts the communicability of the disease, it occurred to me that here we had an almost ideal method of—shall we say—inoculation, and I began to make enquiries on these lines.

I find that of seventy-seven lepers admitted from January 1st to May 31st, 1905, forty-four had itch on admission, eleven more remembered having itch, and twenty-two could not remember.

When we take the life-history of the *Acarus scabei*, we see that the way it burrows under the cuticle, and remains in a position for a considerable time where the conditions are most favourable for the growth of the leprous bacilli with which it is covered, coming as it does from the part of the leper where the leprous bacilli are most numerous and vigorous, it is, I think, fair to assume that this is a possible way of communicating the disease.

I do not propose on this occasion going any further into the large question of leprosy or to refer in any way to the various theories advanced by different observers, but as we have Roman Catholics at Pulau Jerajak, I think it right to mention that forty-one of the forty-seven were converted on the island; of the four remaining, two are Eurasians, who probably contracted the disease from the sister of one of them who is in the female leper ward on Penang Island; the other two, one a Chinaman, one a Tamil, are the sons of Christian parents. With reference to occurrence of leprosy amongst Roman Catholics generally, it may be found that similar conditions exist elsewhere.

I am very sorry to have to present this paper in so imperfect a state, but I wish to draw attention to this idea of communication of leprosy. It may be possible to decide whether it is a special form of animal that conveys the disease or simply the ordinary itch insect, which, again, may have the leprous bacillus *in* or simply *on* its tissues.

THE SUCCESSFUL APPLICATION OF PREVENTIVE MEASURES AGAINST BERI-BERI.

By Hamilton Wright, M.D., C.M.(McGill).

Late Director of the Institute for Medical Research, Federated Malay States.

Abstract IV.

(From the *Journal of Hygiene*, vol. v., No. 2. April, 1905.)

Beri-beri is an acute infectious disease with a definite primary lesion.

The reasons which led me to this conclusion are: (1) That the disease begins after an incubation period of ten to twenty days, with more or less marked symptoms of gastro-duodenal irritation, often diagnosed as simple indigestion; (2) that the gastro-duodenal syndrome is accompanied or soon followed by various

degrees of sensori-motor and autonomic paralysis; (3) that this syndrome lasts from twenty to forty days, during which time death may ensue (acute pernicious and acute beri-beri), and that otherwise the cases either recover altogether or pass into a state of residual paralysis. I have made a large number of *post-mortem* examinations upon beri-beri cases, and have found that only in the acute stage of the disease autopsies showed a more or less marked gastro-duodenitis, with hæmorrhagic injection of the crests of the valvulæ conniventes. Microscopically a varying degree of necrosis of the mucosa was discovered, accompanied by more or less marked signs of acute inflammation, and in the necrosed mucosa a special bacillus of constant morphological character was found. These changes were not observed in the residual stage of the disease; and I believe that beri-beri is thus analogous to diphtheria, in that it is an acute disease with a definite local lesion, from which a toxin is disseminated throughout the body.

Although I have not actually demonstrated that the bacillus seen in the gastric and duodenal mucous membrane escapes in the intestinal discharges, I have assumed both that this is the case and that it is by this means that the spread of beri-beri takes place.

Acting on these conclusions, I made in 1902 certain recommendations with reference to the mode of life and hygienic surroundings of the prisoners in the Kuala Lumpur gaol. More than two years have elaped since the application of the preventive measures which I advocated was begun—time enough to test their efficiency. I have been unable myself to watch the effect of the new *regime*; I am therefore greatly indebted to my successor, Dr. C. W. Daniels, for a report of the results, from which I have quoted freely in the following account.

The various hygienic reforms which came into force between May and September, 1902, were as follows:—

(1) All prisoners were employed during the greater part of the day at extramural work.

(2) The whole gaol was thoroughly ventilated, all the air inlets and outlets being enlarged.

(3) The gaol has been thoroughly disinfected several times.

(4) Under the old *regime* the prisoners defæcated and urinated in their cells.

(5) The prisoners formerly ate their meals with their fingers, in their cells. This source of infection has been ended in the gaol. Since May, 1902, all meals except the evening meal at 5 p.m. are partaken of outside the cells. Since April 9th, 1904, all meals have been eaten outside of the cells.

These reforms were instituted between May and September, 1902, and it is fair to assume that they became effective about September. As a result the number of acute cases fell from 28 in September, 1902, to none in February, 1903, and for seven consecutive months no fresh case occurred. Towards the end of 1903 four cases occurred; of these two had been in gaol for two months, and one for thirty-seven days. If we admit the possibility of an incubation period of two months, it is possible that these patients contracted the disease before admission to the gaol. In the first four months of 1904 only three certain cases of acute beri-beri occurred; two of them had been in gaol for seven months and one for over a year.

The disappearance of the disease was not due to a general diminution of the disease throughout the Malay Peninsula, as the reports show that, while extramural beri-beri remained epidemic, the intramural disease diminished and finally disappeared.

The abolition of beri-beri in the gaol hospital has been attained by hygienic reforms founded on the view which I have advanced that the infective agent is contained in the excreta of the patient during the acute stage of the disease and that infection results from fæcal contamination. I would suggest that, as an additional preventive measure, the stools of those suffering from acute beri-beri be disinfected.

It should not be forgotten that, from May 1st, 1902, to the present time, the prisoners have been on a diet of lower grade in the nitrogen content than obtained during the previous year or so, during which beri-beri was almost epidemic. This fact should set at rest the question of diet as a factor in the causation of beri-beri.

CEREBRO-SPINAL MENINGITIS AT ZUNGERU AND YOLA IN NORTHERN NIGERIA.

(Forwarded for publication by the courtesy of the Secretary of State for the Colonies.)

REPORT ON AN OUTBREAK OF EPIDEMIC CEREBRO-SPINAL MENINGITIS IN ZUNGERU DURING FEBRUARY AND MARCH, 1905.

By the Principal Medical Officer of the District.

The increased mortality among the natives in and around Zungeru, and rumours of an excessive death-rate in Kano, Zaris, Ilorin, and several of the smaller villages attracted much attention about the middle of February. Small-pox was epidemic at the time, and at first it was thought that the deaths were due to this disease, the natives themselves calling the sickness "small-pox fever." It was gathered that outbreaks such as this, though not of annual occurrence, were by no means uncommon during the first three months of the year, and were supposed to be due to the excessive dryness of the season. All evidence pointed to an enormous case mortality, and the natives stated that in some years cattle, in others men, and sometimes both cattle and men, were attacked.

At first no cases of the disease could be found, all the earlier cases running such a rapid course that death occurred within a few hours, and owing to the native's habit of hiding himself when ill, the first intimation usually received was that a dead body had been found, and no information was obtainable as to what had been the cause of death. *Post mortems* were made where possible, but nothing was discovered but intense congestion of the vessels of the cerebral cortex.

A case of cerebro-spinal meningitis was admitted to the native hospital earlier in the month, and this was thought to be a sporadic one, but after the lapse of a week many nervous cases arrived, all corresponding more or less with the first, and on February 28th a native clerk was admitted with the classical symptoms

of the disease. He died within twenty-four hours of admission, and the diagnosis was fully borne out at the autopsy. Epidemic cerebro-spinal meningitis was then decided on as a working hypothesis for the investigation of the epidemic. The health officer was instructed to search the native town, and send into hospital all cases of a doubtful nature for observation, and a house-to-house visitation was made.

Eight cases of the disease were discovered [illegible] on the 2nd

After about twenty-four hours, in cases running an unfavourable course, the stupor or somnolence gives place to delirium, the patient becomes very restless, noisy, and sometimes violent. He cannot remain in one position for more than a few seconds. The temperature swings irregularly from perhaps 97° in the morning to 102° or 103° in the evening. Later, if he lives, relapses are noticed following hard on one [illegible]se generally slow but strong. Still he third day the patient sinks into a lly deepening into complete coma. The ıcome congested, and the face somewhat petic eruptions may appear on the lips respiration becomes sighing, the teeth ıordes, and the tongue dry and brown, ınt gradually sinks into an adynamic ırminates in death. In most cases a ıarge exuded from the mouth, nose, and ılve hours before death, and the breath ıcured by loud moist râles which may be yards distance.

ity of the disease varies a good deal, g sometimes within twenty-four hours, ty of deaths occurred after four or five

ıg tables show the occurrence of the nptoms in thirty-two instances. The ıg the number of days each patient was lmission to hospital, though generally t be vouched for in every instance, as tained on purely native evidence is not ıe.

charts attached show the irregular he fever.

Morbid Anatomy.

the *post-mortem* examinations made lemic are given below.

Mousa, aged 23, native clerk, died 05. This man died after three days' autopsy was made about twelve hours

vessels of the scalp were much injected. ıoid was much congested. Patches of rulent exudate were scattered over the the cortical sulci. A large quantity of ıte was seen around the cerebellum the base of the brain, bathing the nerves. It also welled up around the nd where a portion of the spinal column ı the dorsal region patches of purulent ound chiefly on the posterior surface of

rge fibrinous clots were seen in the heart extending through the mitral and s. The ventricles were nearly empty. were distended with blood. The heart s. The lungs were both slightly conleuræ and pericardium were normal.

'he stomach showed a good deal of l a few petechial hæmorrhages were ucous membrane. The liver weighed kidney 5 ozs., the right kidney 5½ ozs., and the spleen 9 ozs.

(2) Mormoh, aged 23, horse boy, died March 2nd,

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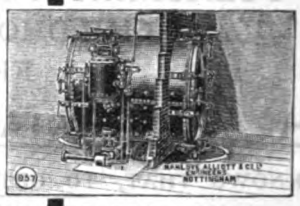
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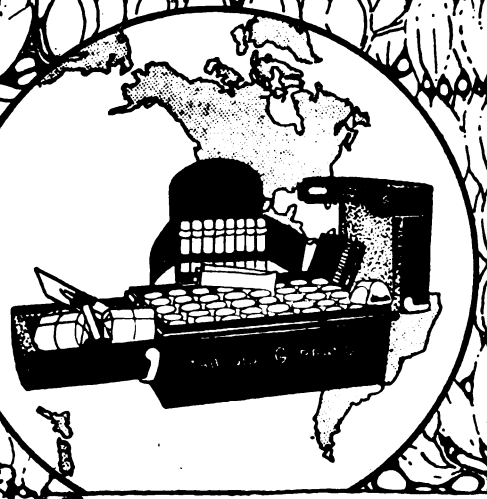
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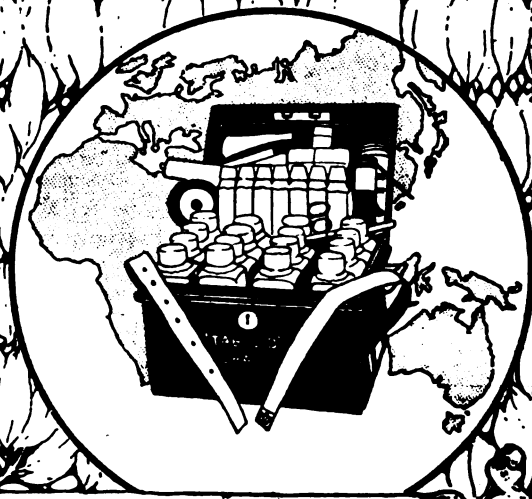
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[For Contents see page iii.]

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[For London School of Tropical Medicine, see page vii.]

THE Journal of Tropical Medicine

Devoted to Medical, Surgical and Sanitary Work in Warm Countries.
Embodying Selections from THE COLONIAL MEDICAL REPORTS.
EDITED BY JAMES CANTLIE, M.B., F.R.C.S., AND W. J. SIMPSON, M.D., F.R.C.P.
ADVISORY COMMITTEE:
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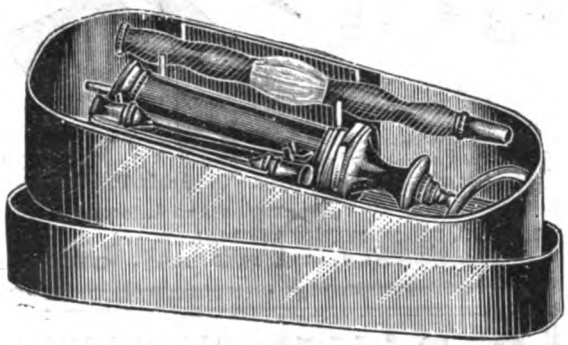
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diagrams and drawings by D. A. Turkhud, M.B., of Bombay, are at once teaching and artistic. This book will no doubt be found in every library, public and private.

Notes and News.

The American Microscopical Society meets at Cedar Point, near Sandusky, Ohio, on July 5th, 6th, and 7th. An especial feature of the meeting will be the papers and discussions on medical zoology. The President, Dr. Henry B. Ward, will open the scientific sessions by an address upon the "Relation of Animals to Disease." One day will be devoted to a symposium with demonstrations on animal parasites and their effects on their hosts.

[We regret that this notice arrived too late for insertion in our last issue.—Ed. *J. T. M.*]

Sir Alfred Jones, K.C.M.G., has increased his subscription to the Colonial Nursing Association from £50 to £250. It is to be hoped the example set by Sir Alfred will be followed by others, in order that this excellent Association may not be hampered in its work by want of funds.

Latent Plague.—The statement made by Sir Henry Blake, Governor of Hong Kong, that some thousands of Chinese in Hong Kong, between June 23rd and July 10th, 1903, had plague bacilli in their blood although all clinical symptoms were absent has been refuted by subsequent observations. The investigations conducted in Manila by Herzog and Hare serve also to show that the existence of latent plague in human beings does not occur.

In Rangoon during March 50,000 rats were killed as a plague prophylactic.

A simple method of preventing ankylostomal infection by way of the soil is described by Sir Patrick Manson: A West Indian sugar-planter encouraged his coolies to dip their feet and legs in green Barbadoes tar and then tread on fine sand. An impervious covering to the skin of the lower extremities was thus obtained.

Plague.

Prevalence of the Disease.

India.—During the weeks ending May 13th, 20th, 27th, and June 3rd, the deaths from plague numbered 42,003, 35,492, 23,038, and 15,317.

South Africa.—During the weeks ending May 13th, 20th, 27th, and June 3rd, the reports were: *East London:* Fresh cases, 8, 0, 3, and 1; deaths, 1, 1, 1 and 1. *King William's Town:* Fresh cases, 0, 3, 1 and 0; deaths, 0. *Queenstown:* Fresh cases, 1, 0, 3 and 0; deaths, 1, 0, 1 and 1.

Mauritius.—No cases from March 16th to first week in June. Weeks ending June 8, 15th, and 24th, fresh cases, 1, 4 and 3; deaths, 0, 3 and 2.

Hong Kong.—During the weeks ending May 27th, June 3rd, 10th and 17th, fresh cases, 20, 21, 21 and 25; deaths, 19, 19, 21 and 26.

Queensland: Ipswich.—During week ending June 13th, fresh cases, 7; deaths, 1; last reported case May 8th.

Egypt: Tukh District.—During weeks ending April 22nd and 29th, fresh cases, 0 and 2; deaths, 1 and 0.

Formosa.—Between April 20th and 30th, fresh cases, 238; deaths, 210.

England: Manchester.—A death from plague occurred in Manchester on June 13th. The patient had arrived on board ship at Middlesborough, *via* Hamburg, from Buenos Ayres, and on reaching his home in Manchester on June 10th, developed plague and died in a couple of days.

Scotland: Leith.—On May 5th a case of plague occurred at Leith; on May 8th and 10th, 1 and 2 additional cases were reported. The cases were all from one house, and consisted of the father, mother, and two of their children. Source of infection uncertain.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Tuberculosis Amongst Negroes.

In New York negroes suffer extensively from tuberculosis. The alleged cause is overcrowding and insanitary dwellings. Steps are being taken to deal with the matter.

Cerebro-spinal Meningitis in Germany.

During April 1,200 cases of cerebro-spinal meningitis occurred in Upper Silesia; about half the number died. In Berlin three cases of the disease were reported on April 5.

Yellow Fever.

Panama.—Between January 1st and April 29th, 1905, the cases of yellow fever amounted to 50, and the deaths from the disease numbered 20. The disease broke out in virulent form in the Government buildings, which are old and insanitary, the victims being clerks in official employ. Gorgas, the Governor, reported on May 12th that no new cases had occurred for nine days, but between that and May 18th six additional cases of yellow fever were reported.

Uncinariasis in Porto Rico.

Medical Record, May 20, 1905. (Leader.)—The Report of the Commission, consisting of Drs. B. K. Ashford, W. W. King, and P. G. Igaravillez, for the Study and Treatment of Anæmia in Porto Rico, published by the U.S.A. Government, states that: (1) The anæmia is due to the presence of the *Uncinaria*

Americana in the human intestine; (2) the parasite *U. Americana* differs from the *U. duodenalis* (*a*) in the nature of the buccal armature of the parasite, and (*b*) in the size of the ova. Of 5,500 cases of anæmia examined, 5,490 were due to uncinariasis; and of this number thirteen died. As pollution of the soil is recognised as the chief medium of infection, and as the larvæ may enter by the mouth or by the skin, the prophylaxis required is devoted to (*a*) general cleanliness and careful washing of the hands before eating; (*b*) the provision of suitable latrines to prevent the fæces polluting the soil broadcast; (*c*) wearing shoes to prevent the larvæ gaining access by way of the skin of the feet.

Nutmeg Poisoning.

Laurie, H. (*Australian Medical Gazette*, April 20th, 1905), records a case of poisoning due to a woman having grated four nutmegs into a cup of hot water, and drinking the whole quantity before going to bed. Some five hours afterwards Laurie found the patient almost unconscious; skin moist and cold, pupils dilated, pulse 156, feeble with occasional irregularity, respirations shallow and occasional sighing. Strychnine gr. $\frac{1}{60}$ was given hypodermically, a mustard leaf applied over the heart, warmth applied to the body, and as soon as possible a large dose of castor oil was administered. The patient made a good recovery. The woman had taken the nutmeg as her periods had not appeared; she was found to be pregnant, but the nutmeg proved useless as an abortifacient. The official dose of nutmeg is 5 to 15 grains, so that the woman had taken at least twenty times the officinal dose.

Can practitioners in the Tropics give any account of nutmeg as a drug in the treatment of disease, or of its use as a means of procuring abortion amongst natives of the Tropics?

New Drugs.

PETROBROSE.—This combination of barley proteids with a hydrocarbon oil contains the diastatic ferment of malt, phosphates, hypo-phosphites, albumen and albumenoids. We have taken pains to ascertain the genuine quality of Petrobrose, and can vouch for its purity and for the care and attention paid to its preparation.

Petrobrose is free from the smell so frequently associated with petroleum compounds, and is most agreeable to the taste.

For chronic intestinal ailments, more particularly chronic dysentery and sprue, Petrobrose lays claim to be of especial use. We have tried Petrobrose for both chronic dysentery and sprue, and find that it is well tolerated by patients suffering from these diseases, serving to allay intestinal irritation, soothe the bowel, and create a healthy tone to the digestive system.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Revista Medica de S. Paulo," March 31, 1905.

Comment on meurt de la fiévre jaune. (Modes of Death in Yellow Fever). By Dr. C. Mauro.

Dr. Mauro states that we have almost complete studies on the mechanism of death in several diseases, but, so far as he is aware, none with reference to yellow fever; for this reason he describes with much detail a series of eighteen typical cases of this disease, which he selects from amongst the many of which he took full notes during the epidemic which raged at Ribeirão Preto in 1903.

The description usually given of yellow fever, with its three periods, with its numerous clinical forms, amongst which many authors have wandered and strayed, show how far we are still from an accurate knowledge of this scourge.

The description of its clinical forms—when this is not based on a pathogenic interpretation, but represents rather a more or less extensive method of cataloguing—is thoroughly useless, not to say impossible, for no other acute disease exists of which it may be said as of yellow fever, that each case is a new revelation of the disease, or that each patient has a nosological personality so peculiarly his own.

Neither does the description of the so-called classical form answer in the great majority of cases, nor can it bear even the most superficial criticism. In the present state of our knowledge, we must regard yellow fever as a general infection with special local affection of the hepatic glandular structures, which presents itself clinically as an acute pyrexia with a cycle of three to four days. This is how it can be seen in its pure form. But three factors may affect this appearance, viz., the soil on which the yellow fever infection is grafted, the severity of the hepatic lesions, and the superadded infections and intoxications.

In yellow fever there is a vulnerability more or less accentuated, not only according to race, age, &c., but also appreciable differences may be seen in different individuals. Neither can it be denied that it has an elective affinity for the hepatic gland, but a discussion on this point would here be out of place. In each case it is noticeable that alcoholism markedly aggravates the infection, that preceding morbid conditions of the kidneys favour renal complications, that over-indulgence, neuroses, &c., favour the determination of nervous symptoms, &c.

Yellow fever, being a toxi-infection with special local action on the liver, the inability of this organ to fulfil its functions is a constant feature of the disease; in fact, all things being equal, it may be stated that it is the extent of the hepatic lesions which influences the progress and the phenomena observed in yellow fever. When the lesion is not severe and the restoration to a normal state can be rapidly restored, the

pure form of yellow fever exists (an acute pyrexia which completes its cycle in three to four days, or the so-called *abortive* form). When the hepatic cells have been more severely affected, the greater form of hepatic insufficiency is established, but merely as an epiphenomenon of yellow fever. But if the liver is very seriously attacked the symptoms of hepatic obstruction are superadded to those of the yellow fever, and the fulminating form is to be seen. The list of symptoms of yellow fever may also be modified or complicated in addition by other infections and intoxications, and indeed, these are rarely wanting, as may be proved by an examination of the blood.

* * * *

Dr. Mauro states that death occurs in yellow fever in one of the following methods: By the severity of the intoxication, the effect being severe and irremediable as regards all the elements of the organism; by the insufficiency of an organ or of a system which has become vulnerable by a peculiar state of morbid receptivity; by a complication nearly always allied to a superadded infection.

A. Superacute toxæmia.
B. Incompetence of the nervous system.
C. Cardiac incompetence { *a* Progressive exhaustion. *b* Acute syncope.
D. Renal incompetence.
E. Hepatic incompetence { *a* Hæmorrhagic form. *b* Nervous form.
F. Complications ... { *a* Intestinal infection. *b* Parotitis. *c* Meningitis (in children). *d* Septic accidents. *e* Acute atrophy of the liver.

A series of eighteen typical cases are then quoted at some considerable length in order to illustrate the various forms of death shown under these various headings.

J. E. N.

"L'Echo Medical du Nord," April 2, 1905.

Ankylostomiasis. A. Calmette and M. Breton.

In Westphalia the miners are admitted to hospital on Monday, in the evening being given 0·25 grams (4 grains) of jalap and the same amount of calomel. On Tuesday morning they get 8 grams (2 drams) ethereal extract of male fern and 20 grams (5 drams) syrup of senna; and a light meal. On Wednesday evening and again on Friday evening the treatment is repeated; the patients being discharged on Saturday evening, and have a four days' rest on full wages.

The worms are completely expelled in 80 per cent. of cases. The dejecta are examined daily for three days; if no eggs are found a certificate is given, but if they are found the miners are only allowed to work above ground, and have to return for treatment in a fortnight or three weeks.

While in hospital the miners receive full wages; half of it is paid by their union, mine-owners paying the other half. All hospital expenses, including medical expenses, are paid by the union.

In Belgium the treatment is less severe, but hardly as efficacious. The first day a purgative dose of castor oil or compound tincture of jalap is given. Next day 4 grams (1 dram) of extract of male fern and 2 grams (½ dram) of chloroform is administered in divided doses at an interval of half an hour. Two hours after 200 grams (6¼ ounces) of chloroform water are taken. This is again followed in two hours by compound tincture of jalap 20 grams (5 drams), with an equal quantity of syrupus rhamni. The treatment is recommenced on the fourth day, the patient leaving hospital on the evening of the sixth day.

Successful treatment depends on the freshness of the ethereal extract of male fern. In large doses—15-20 grams (4-5 drams)—it may cause disturbance of sight, faintness, headache and temporary albuminuria; this is avoided by giving the drug in divided doses, combined with a purgative such as castor oil. Out of 19,000 miners treated in Germany the sight was only affected three times, twice being in cases of marked anæmia.

Thymol (syr acid. thymic.) is chiefly relied upon in Italy, England, and America. It is given in 4 to 8 gram (1-2 drams) doses in cachets or capsules; sometimes even 15 grams (3¾ drams) are given. The treatment consists of rigorous milk diet for a day, with in the evening a purgative of 0·50 gram (8 grains) of calomel, combined with 0·25 gram (4 grains) of jalap, or 2 grams (½ dram) of powdered senna. Next morning 2 grams (½ dram) of thymol is given every two hours, three or four times; each dose being followed by a cupful of warm mucilaginous drink, as barley water or rice water. At mid-day, clear soup, milk, or coffee is given. It is necessary to avoid oil as a purgative or in any other way, chloroform water, glycerine or ether, and, above all things, any form of alcohol. Toxic effects are lowering of the temperature, slowing of the pulse and respiration, collapse and delirum. The patient has a burning sensation in the pit of the stomach, which is relieved by sipping cold or iced water.

T. P. B.

"Archiv. f. Derm. u. Syph.," September, 1903.

Pathology of Madura Foot. M. Oppenheim.

Histologically the black and yellow varieties of the disease, as shown by specimens obtained from Bombay, are indistinguishable. Both are granulomata made up of round cells, epithelioid cells, plasma cells, and giant cells. Both tend to abscess formation and necrosis, though the black variety is more apt to form abscesses and to liquefy than the yellow, which has a greater tendency to form new connective tissue. Hyaline degeneration is absent in the black variety, but present in the yellow. Great difference exists in the fungus present; for in the black variety it is of the nature of an oïdium, while in the yellow it is closely allied to the actinomyces.

T. P. B.

"Gazette des Hoptiaux," p. 1447, 1905.

ELEPHANTIASIS.

The theories prevalent regarding elephantiasis may be arranged into:—

(1) The parasitic theory. A parasite is present in the blood or lymphatics.

(2) The mechanical theory. A stasis in the blood-vessels or lymphatics.

(3) The infectious theory.

In regard to the *parasitic* theory the writer in the Gazette is of opinion that it has not been scientifically demonstrated that the elephantiasis of warm countries is due to filariasis. The *mechanical* theory of prolonged blood stasis will not account for interstitial thickening of the tissues unless accompanied by an inflammation. The *infectious* theory is supported by Achaline, who considers the conditions to be due to the streptococcus of erysipelas; but these cannot be considered to be the prime cause of elephantiasis. The only factor common to all forms of elephantiasis is inflammation, whether arising from a phlebitis, exogenous infection, or from endogenous thickening, caused by swarms of round cells grouped around the capillary vessels.

The writer in the Gazette holds that all we know of the pathology of elephantiasis resolves itself into a condition of the parts due to interstitial hyperplasia of the skin, brought about by an inflammatory œdema, the active etiological factor being unknown.

"Presse Médicale," Paris, November 19, 1905.

L'Habitation Coloniale. By J. D'Anfreville.

The authorities in Senegal have directed that before the plans of a new dwelling house are passed a medical expert on hygiene must be consulted. D'Anfreville is of opinion that certain well-considered plans should be followed when a house is about to be built in a tropical country. (1) The dwelling house should be apart from the kitchen and outhouses. (2) The house should be of a single storey, rectangular in shape, and the partitions between the rooms should run parallel to each other from front to back of the house. (3) The doors opening on the verandah surrounding the house should be opposite each other in each room, and, in addition, there ought to be a door at each end of the house and opposite the doors in the partitions, so that air can sweep right through the house from front to back and from end to end.

American Medicine, June 3, 1905.

Malarial Infection Presenting Symptoms of Multiple Neuritis. By G. E. Price, M.D.

Price relates the case of a young girl who, after malarial infection, showed symptoms of multiple neuritis for eighteen months. The patient suffered pain, abnormal sensations, diminished muscular power with hand tremors, foot-drop, intermittent fever, and the æstivo-autumnal parasite in the blood. Quinine effected a cure.

Zeitschrift für Klinische Medizin, Berlin, Vol. lvi., Nos. 5, 6.

Zur Kenntniss der Sporadischen Einheimischen Dysenterie. By A. Albu.

Albu describes a case of acute dysentery in a woman who had returned to Berlin after a visit to Silesia and Breslau. *Post mortem*, the intestines presented the characteristic appearances of tropical dysentery. The *Amœba dysenteriæ* (Schaudin's histolytic amœba) was cultivated from the stools.

Spolia Zeylanica, vol. ii., Part viii., March, 1905.

1. *Cysticercus cellulosæ* in a Tamil. By A. J. Chalmers, M.D., F.R.C.S.

2. Anophelinæ found in Ceylon. By A. J. Chalmers.

(1) Chalmers describes a case of *Cysticercus cellulosæ* in a Tamil woman, and remarks that so far as can be ascertained the parasite has never been met with before in Ceylon. The patient, aged 40, died of obscure symptoms, and at the *post mortem* well-developed cysticerci were found in both pictoralis major and in the brain, in the grey matter of the cortex, in the choroid plexus, in the third ventricle, in the brachium conjunctivium, and in the pons.

The tape-worms known to affect man in Ceylon are *Tænia solium* and *Tænia saginata*. No tape-worms were found in the intestine of the Tamil woman examined by Dr. Chalmers.

(2) LIST OF SPECIES FOUND IN CEYLON.

I have recognised the following species of the *Anophelinæ* in Ceylon, and Mr. Green, of Peradeniya, has found one species, *Nyssorhynchus maculatus*, which I have not found, but which is included to make the list complete. The names are those given in Theobald's Monograph on the Culicidæ of the World, vol. iii.

(1) Genus *Myzomyia* (Blanchard): Species 1: *Myzomyia Rossii* (Giles). Species 2: *Myzomyia culicifacies* (Giles). Species 3: *Myzomyia Listoni* (Liston).

(2) Genus *Myzorhynchus* (Blanchard): Species 4: *Myzorhynchus barbirostris* (Van der Wulp).

(3) Genus *Nyssorhynchus* (Blanchard): Species 5: *Nyssorhynchus maculipalpis* (Giles). Species 6: *Nyssorhynchus fuliginosus* (Giles). Species 7: *Nyssorhynchus Theobaldi* (Giles). Species 8: *Nyssorhynchus maculatus*, found by Mr. E. E. Green.

(4) Genus *Pyretophorus* (Blanchard): Species 9: *Phritophorus jeyporensis* (Theobald).

(5) Genus *Cellia* (Theobald): Species 10: *Cellia argyrotarsis* (Robineau-Desveidy).

The most common are the *Myzomyia Rossii*, *Myzomyia culicifacies*, *Myzorhynchus barbirostris*. The *Anophelinæ* found in Ceylon are the same species as those found by Stevens, Christophers, James, and others in India, and are different from those of Africa and America.

A doubtful species is noted, *Nyssorhynchus Jamesii*, by Dr. Philip, from Mutwal, Colombo, named from a damaged specimen.

"The China Medical Missionary Journal," October, 1904.

1. Inherited Syphilis in Hankow.

2. *Ankylostomum Duodenale* at Chang-Teh, Hunan.

3. Leprosy in Hangchow, Fokien.

(1) S. R. Hodge remarks that in hospital practice inherited syphilis occurs in about the same propor-

tion as in Britain. In China the conditions of life favour the operation of the law of the survival of the fittest which works unhindered.

Severe cases of epiphysitis with subsequent pyæmia and brain trouble, succumb early, and the children are not seen at hospital; many, too, fall victims later on to general marasmus. Enlargement of the spleen is frequent in the hereditary syphilis of childhood, and may cause a considerable abdominal tumour. The liver, too, is frequently enlarged, so that the clinical signs and symptoms of chronic malaria are present, and may lead to confusion.

(2) O. T. Logan, writing from the central Chinese province of Hunan, mentions the fact that patients with ankylostoma eggs in their faces are not an uncommon occurrence in that district. Dr. Logan recommends Jenner's solution as a means of staining the ova of the ankylostomum.

(3) In the large city of Hangchow a leper settlement has recently been provided outside the city which affords work for the lepers, such as fishing and gardening, and the general comfort of the lepers has been greatly improved thereby. In regard to the cause of leprosy it is noted that in this district salt is dear and most of the fish is sun-cured, and as the climate is hot and putrefaction speedy, all the conditions favouring Mr. Hutchinson's theory are present. Contagion is unknown; attendants do not contract leprosy, husband and wife seldom suffer at the same time, and two cases in one family are quite exceptional.

"Presse Médicale," January 14, 1905.

TREATMENT OF TROPICAL ULCERS.

Fontoynonta Jourdan, in Madagascar, irrigates the ulcers with a 5 per cent. watery solution of eosin, and exposes them to the action of the sun during the day, using an ordinary dressing at night.

In Europeans the parts adjacent to the sore must be protected by an opaque dressing.

Almost as good results have been attained by exposing the sore to the sun's action without using eosin.

T. P. B.

"Le Caducée," March 18, 1905.

PREVENTION AND CURE OF BERI-BERI.

Dr. J. Hulshoff Pal has investigated the action of the fruit of *Phaseolus radiatus*, called by the Malays *katjang-ido*, and finds that it is beneficial in cases of recent beri-beri, but not when there is degeneration of the peripheral nerves; it causes albuminuria and œdema to disappear. It begins to act on the fifth day, and is a certain prophylactic, but its administration must be continued in doses of 150 grammes. Water does not absorb the active principle.

T. P. B.

"Lancet-Clinic," Cincinnati, Ohio, May 20, 1905.

Treatment of Spotted Fever. By P. M. Ashburn.

Ashburn recommends for spotted fever the Brand treatment of typhoid, with, in addition, the occasional use of normal salt infusions and such drugs as calomel, alcohol and strychnine. Immersed in a bath of 73° F., friction is applied to the body and limbs, with cold applications to the head, repeating the treatment every three hours for from ten to twenty minutes at a time so long as the temperature remains above the normal.

Yellow Fever.

British Honduras: Belize.—May 25th to June 4th, fresh cases, 4; deaths, 4.

Honduras: Puerto Cortez.—May 25th to 29th, fresh cases, 5; deaths, 3.

Mexico: Tierra Blanca.—May 14th to 20th, fresh cases, 0; deaths, 1.

Panama.—January 1st to May 13th, fresh cases, 63; deaths, 22.

EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Medicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate, Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular. West Africa.

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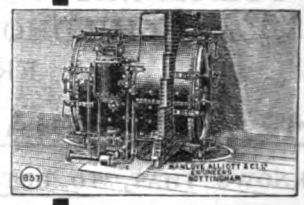
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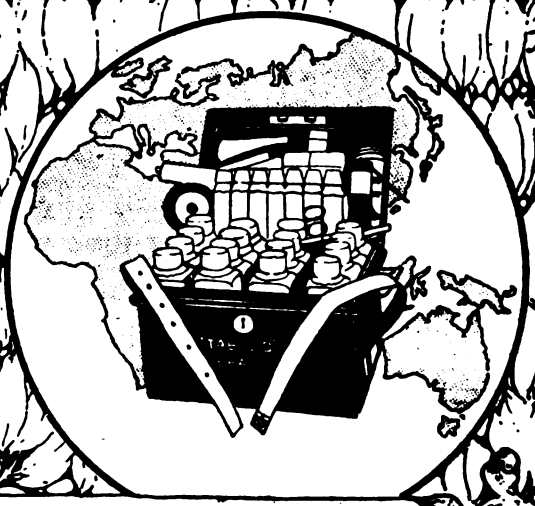
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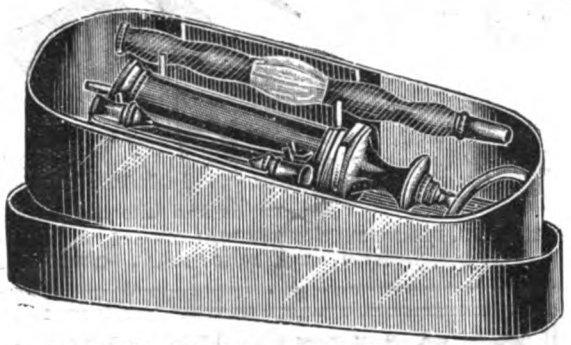
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[1] Read before the Penang Division of the British Medical Association, June 2nd, 1905.

Itch Insect the Possible Carrier of Leprosy.

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to recognise from various facts of the disease, it occurred to me almost ideal method of—shall we d I began to make enquiries on

enty-seven lepers admitted from 31st, 1905, forty-four had itch on lore remembered having itch, and t remember.

life-history of the *Acarus scabei*, it burrows under the cuticle, and n for a considerable time where ost favourable for the growth of th which it is covered, coming as of the leper where the leprous erous and vigorous, it is, I think, lis is a possible way of communi-

n this occasion going any further tion of leprosy or to refer in any theories advanced by different have Roman Catholics at Pulau ght to mention that forty-one of converted on the island; of the are Eurasians, who probably con-om the sister of one of them who r ward on Penang Island; the naman, one a Tamil, are the sons . With reference to occurrence Roman Catholics generally, it may conditions exist elsewhere.

have to present this paper in so I wish to draw attention to this n of leprosy. It may be possible is a special form of animal that r simply the ordinary itch insect, have the leprous bacillus *in* or

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L APPLICATION OF PRE-URES AGAINST BERI-BERI.

WRIGHT, M.D., C.M.(McGill).
titute for Medical Research, Federated Malay States.

BSTRACT IV.

Hygiene, vol. v., No. 2, April, 1905.)

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Original Communications.

ON A POSSIBLE MODE OF COMMUNICATION OF LEPROSY.[1]

By T. C. Mugliston, M.D.

Colonial Surgeon, Penang.

I bring forward these few ideas with considerable diffidence, and solely with the hope that the attention of others dealing with large masses of lepers may have their attention directed towards what, I suggest, is a plausible cause of the propagation of leprosy; and that in dealing with the variety of causes, strenuously urged by eminent authorities, my imperfect ideas may be given a small place in their researches.

In investigating the origin of a disease, I think it is logical to search for the primal cause of the disease, and if such be discernible to follow its action.

In leprosy we have in all types but one kind of bacillus and we may accept this as the primal cause of the disease, similarly to the way we accept the tubercle bacillus (from which it is difficult to differentiate it) as the primal cause of tubercle of the lungs, &c.

This being accepted, we have to enquire how this primal cause is introduced into the tissues.

We all know that the microbes of different diseases have different degrees of readiness of introduction. Thus, for example, the anthrax bacillus is welcomed with avidity by any absorbing surface, whereas that of tubercle is more difficult of transference. Whether this is due to increased vigour of the bacillus itself, or to less resistance through some hereditary predisposition of the part attacked or not, there are various opinions,

I have always looked on leprosy as one of the more difficult diseases to communicate.

We see healthy attendants living in close communion with lepers for years without contracting the disease, in a way that would not be possible say in the case of patients suffering from tubercle of the lungs.

I have known a dresser contract the disease in a leper hospital, but this is rare, and what I am coming to may explain it.

If we accept this difficulty of communication as a fact, we have to look further for the cause than the casual touching of an absorbing sore on an attendant's hand by the discharges from a leprous sore. We must look for some instance where the leprous bacillus is kept in apposition with an absorbing surface for a much longer period than the above, and where it will be under more favourable conditions for growth than on the hands of an attendant or dresser who understands the importance of cleanliness.

I have for many years, both when in charge of the male and female leper hospitals in Singapore, and for the last few years since I have had charge of the Pulau Jerajak Leper Asylum in Penang, where we have over 300 lepers, been looking for some way in which the leper bacillus could have a favourable chance of transference and growth.

[1] Read before the Penang Division of the British Medical Association, June 2nd, 1905.

Itch Insect the Possible Carrier of Leprosy.

I have for many years noted the almost universal occurrence of itch in lepers, but I fear that, until a few years ago, I only looked on this as one of the dirt conditions which might be expected in those who have little to look forward to in life, and so get careless of their surroundings. In connection with this I have found that of 400 patients in the Pauper Hospital, twenty-five have itch.

Later, as I began to recognise from various facts the communicability of the disease, it occurred to me that here we had an almost ideal method of—shall we say—inoculation, and I began to make enquiries on these lines.

I find that of seventy-seven lepers admitted from January 1st to May 31st, 1905, forty-four had itch on admission, eleven more remembered having itch, and twenty-two could not remember.

When we take the life-history of the *Acarus scabei*, we see that the way it burrows under the cuticle, and remains in a position for a considerable time where the conditions are most favourable for the growth of the leprous bacilli with which it is covered, coming as it does from the part of the leper where the leprous bacilli are most numerous and vigorous, it is, I think, fair to assume that this is a possible way of communicating the disease.

I do not propose on this occasion going any further into the large question of leprosy or to refer in any way to the various theories advanced by different observers, but as we have Roman Catholics at Pulau Jerajak, I think it right to mention that forty-one of the forty-seven were converted on the island; of the four remaining, two are Eurasians, who probably contracted the disease from the sister of one of them who is in the female leper ward on Penang Island; the other two, one a Chinaman, one a Tamil, are the sons of Christian parents. With reference to occurrence of leprosy amongst Roman Catholics generally, it may be found that similar conditions exist elsewhere.

I am very sorry to have to present this paper in so imperfect a state, but I wish to draw attention to this idea of communication of leprosy. It may be possible to decide whether it is a special form of animal that conveys the disease or simply the ordinary itch insect, which, again, may have the leprous bacillus *in* or simply *on* its tissues.

THE SUCCESSFUL APPLICATION OF PREVENTIVE MEASURES AGAINST BERI-BERI.

By Hamilton Wright, M.D., C.M.(McGill).

Late Director of the Institute for Medical Research, Federated Malay States.

Abstract IV.

(From the *Journal of Hygiene*, vol. v., No. 2, April, 1905.)

Beri-beri is an acute infectious disease with a definite primary lesion.

The reasons which led me to this conclusion are: (1) That the disease begins after an incubation period of ten to twenty days, with more or less marked symptoms of gastro-duodenal irritation, often diagnosed as simple indigestion; (2) that the gastro-duodenal syndrome is accompanied or soon followed by various

degrees of sensori-motor and autonomic paralysis; (3) that this syndrome lasts from twenty to forty days, during which time death may ensue (acute pernicious and acute beri-beri), and that otherwise the cases either recover altogether or pass into a state of residual paralysis. I have made a large number of *post-mortem* examinations upon beri-beri cases, and have found that only in the acute stage of the disease autopsies showed a more or less marked gastro-duodenitis, with hæmorrhagic injection of the crests of the valvulæ conniventes. Microscopically a varying degree of necrosis of the mucosa was discovered, accompanied by more or less marked signs of acute inflammation, and in the necrosed mucosa a special bacillus of constant morphological character was found. These changes were not observed in the residual stage of the disease; and I believe that beri-beri is thus analogous to diphtheria, in that it is an acute disease with a definite local lesion, from which a toxin is disseminated throughout the body.

Although I have not actually demonstrated that the bacillus seen in the gastric and duodenal mucous membrane escapes in the intestinal discharges, I have assumed both that this is the case and that it is by this means that the spread of beri-beri takes place.

Acting on these conclusions, I made in 1902 certain recommendations with reference to the mode of life and hygienic surroundings of the prisoners in the Kuala Lumpur gaol. More than two years have elaped since the application of the preventive measures which I advocated was begun—time enough to test their efficiency. I have been unable myself to watch the effect of the new *regime*; I am therefore greatly indebted to my successor, Dr. C. W. Daniels, for a report of the results, from which I have quoted freely in the following account.

The various hygienic reforms which came into force between May and September, 1902, were as follows:—

(1) All prisoners were employed during the greater part of the day at extramural work.

(2) The whole gaol was thoroughly ventilated, all the air inlets and outlets being enlarged.

(3) The gaol has been thoroughly disinfected several times.

(4) Under the old *regime* the prisoners defæcated and urinated in their cells.

(5) The prisoners formerly ate their meals with their fingers, in their cells. This source of infection has been ended in the gaol. Since May, 1902, all meals except the evening meal at 5 p.m. are partaken of outside the cells. Since April 9th, 1904, all meals have been eaten outside of the cells.

These reforms were instituted between May and September, 1902, and it is fair to assume that they became effective about September. As a result the number of acute cases fell from 28 in September, 1902, to none in February, 1903, and for seven consecutive months no fresh case occurred. Towards the end of 1903 four cases occurred; of these two had been in gaol for two months, and one for thirty-seven days. If we admit the possibility of an incubation period of two months, it is possible that these patients contracted the disease before admission to the gaol. In the first four months of 1904 only three certain cases of acute beri-beri occurred; two of them had been in gaol for seven months and one for over a year.

The disappearance of the disease was not due to a general diminution of the disease throughout the Malay Peninsula, as the reports show that, while extramural beri-beri remained epidemic, the intramural disease diminished and finally disappeared.

The abolition of beri-beri in the gaol hospital has been attained by hygienic reforms founded on the view which I have advanced that the infective agent is contained in the excreta of the patient during the acute stage of the disease and that infection results from fæcal contamination. I would suggest that, as an additional preventive measure, the stools of those suffering from acute beri-beri be disinfected.

It should not be forgotten that, from May 1st, 1902, to the present time, the prisoners have been on a diet of lower grade in the nitrogen content than obtained during the previous year or so, during which beri-beri was almost epidemic. This fact should set at rest the question of diet as a factor in the causation of beri-beri.

CEREBRO-SPINAL MENINGITIS AT ZUNGERU AND YOLA IN NORTHERN NIGERIA.

(Forwarded for publication by the courtesy of the Secretary of State for the Colonies.)

REPORT ON AN OUTBREAK OF EPIDEMIC CEREBRO-SPINAL MENINGITIS IN ZUNGERU DURING FEBRUARY AND MARCH, 1905.

By the Principal Medical Officer of the District.

The increased mortality among the natives in and around Zungeru, and rumours of an excessive death-rate in Kano, Zaris, Ilorin, and several of the smaller villages attracted much attention about the middle of February. Small-pox was epidemic at the time, and at first it was thought that the deaths were due to this disease, the natives themselves calling the sickness "small-pox fever." It was gathered that outbreaks such as this, though not of annual occurrence, were by no means uncommon during the first three months of the year, and were supposed to be due to the excessive dryness of the season. All evidence pointed to an enormous case mortality, and the natives stated that in some years cattle, in others men, and sometimes both cattle and men, were attacked.

At first no cases of the disease could be found, all the earlier cases running such a rapid course that death occurred within a few hours, and owing to the native's habit of hiding himself when ill, the first intimation usually received was that a dead body had been found, and no information was obtainable as to what had been the cause of death. *Post mortems* were made where possible, but nothing was discovered but intense congestion of the vessels of the cerebral cortex.

A case of cerebro-spinal meningitis was admitted to the native hospital earlier in the month, and this was thought to be a sporadic one, but after the lapse of a week many nervous cases arrived, all corresponding more or less with the first, and on February 28th a native clerk was admitted with the classical symptoms

of the disease. He died within twenty-four hours of admission, and the diagnosis was fully borne out at the autopsy. Epidemic cerebro-spinal meningitis was then decided on as a working hypothesis for the investigation of the epidemic. The health officer was instructed to search the native town, and send into hospital all cases of a doubtful nature for observation, and a house-to-house visitation was made.

Eight cases of the disease were discovered, which, together with D

After about twenty-four hours, in cases running an unfavourable course, the stupor or somnolence gives place to delirium, the patient becomes very restless, noisy, and sometimes violent. He cannot remain in one position for more than a few seconds. The temperature swings irregularly from perhaps 97° in the morning to 102° or 103° in the evening. Later, if he lives, relapses are noticed following hard on one

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The Maintenance of Health in the Tropics

BY

W. J. SIMPSON, M.D., F.R.C.P.

Professor of Hygiene, King's College, London; and Lecturer on Tropical Hygiene at the London School of Tropical Medicine

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A FEW PRESS OPINIONS.

"'The Maintenance of Health in the Tropics,' by Professor W. J. Simpson, forms a very interesting and instructive little manual. The preface explains the scope of the book in a few words, namely, a small manual dealing with personal hygiene in a simple and popular manner for laymen and young medical men visiting the Tropics or residing therein. Such a handbook has been much required; it will supply a distinct demand, and will answer a question so often asked by the intending visitor to the Tropics, 'Where can I get a book that will tell me briefly what things I have to avoid, and how I can look after my health when I go abroad?" No one is better qualified than Professor Simpson, with his wide tropical experience, to write such a book, and after reading it carefully it is evident he has succeeded in his mission. The first three chapters deal with climate, personal precautions, diet, drinking water, and dwelling-houses; the fourth, perhaps the most important in the book, with the illnesses of the Tropics and their prevention; the fifth with snake and insect bites, and the last with wounds and medical equipment. A word on tents, hammocks, and camp beds in the chapter on dwelling-houses would not have been amiss for the sportsman, naturalist, and prospector whose bent may lead him to the wilds of Africa or other uncivilized regions. The part of the manual dealing with malaria and its prevention is clearly put, and should convince the most sceptical. Here the author puts his finger on one of the most important points of mosquito prophylaxis, namely, that in addition to individual efforts measures must also be taken by the local authority. Unless this is done success will never be obtained. It is useless, as the author remarks, to clear a house of mosquitos, if the neighbour over the wall is to go on in a state of apathy and let mosquitos by thousands breed in his insanitary compound. The prevention of plague, cholera, typhoid fever, dysentery, and other diseases is clearly discussed. The treatment of stings and bites of insects, by no means the least important of tropical troubles, is dealt with. A very good protective agent against chiggers, not mentioned in the book, is to sprinkle the floors with an infusion of tobacco leaves, and also to put them in boots and slippers. The manual may be heartily recommended to all going abroad; it may be read with interest on the voyage, and will save much illness and trouble when the destination is reached."—*British Medical Journal, July* 8, 1905.

"A manual prepared at the request of the Committee of the London School of Tropical Medicine. It should be understood that this is not a technical work intended for professional use, but adapted to the needs of the ordinary resident in tropical or sub-tropical regions. One of the most important discoveries in the region of medicine in modern times is that the mosquito is the efficient cause of yellow fever and filariasis. A combination of private and public effort can go a long way towards stamping out these diseases that certainly would have been thought the wildest of fancies five-and-twenty years ago."—*The Spectator.*

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of the disease. He died within twenty-four hours of admission, and the diagnosis was fully borne out at the autopsy. Epidemic cerebro-spinal meningitis was then decided on as a working hypothesis for the investigation of the epidemic. The health officer was instructed to search the native town, and send into hospital all cases of a doubtful nature for observation, and a house-to-house visitation was made.

Eight cases of the disease were discovered, which were placed in a temporary segregation hospital, and sanitary measures were taken to prevent its further spread as far as possible, these measures consisting in burning or disinfecting all houses from which cases had been taken, in opening up the more crowded portions of the town, and in isolating all fresh cases. I append a chart which shows graphically the admissions, deaths, mean temperature, and relative humidity during March.

Etiology.—During the earlier part of the year many fires had occurred in the native town, destroying great numbers of the grass huts and driving the inhabitants into the remaining houses, with the result that portions of the town had become greatly overcrowded. This condition of affairs undoubtedly contributed to the spread of the disease after its introduction, but whether the disease is endemic in a mild form and occasionally becomes epidemic, or whether the disease has been introduced from without, there is no evidence to show. The former is probably the correct explanation, though no previous case has been recorded in Northern Nigeria.

Clinical Picture.—The following is a clinical picture of the average case founded on the signs and symptoms observed in the first seventeen cases which were admitted to the segregation hospital.

The patient when first seen is lying on his side with one or both knees slightly drawn up, his back is arched backwards, and his head retracted. He is generally only semi-conscious, but can be roused, and then moans and stares rather wildly, with an anxious expression on his face. If he can be induced to rise he does so in a characteristic manner, first rising to his knees and then to his feet, keeping the head, neck, and trunk rigid during the operation. If an effort is made to raise the head when he is recumbent the whole of the head, neck, and trunk is raised by the same action, and when having to enter a low doorway he sinks gradually to his knees, and in this attitude shuffles in with head thrown back and spine rigid. When in the erect posture he sways and grasps at the nearest means of support. On being questioned he complains of severe pain at the back of the head, and of pain in the lumbar and dorsal regions. Pressure on the neck below the occiput on the posterior neck muscles and on the cervical spine is obviously painful, but tenderness of the dorsal and lumbar parts of the spine is not so marked, though generally present. Pains in the limbs are by no means uncommon. Kernig's sign could be elicited in nearly every case, and photophobia was a pretty constant symptom. Strabismus was absent, though curiously enough it was present in the first case observed, where it had existed from childhood. Vomiting was a pretty constant symptom in the earlier cases. The temperature is generally not high, running from 100° to 103°. Pulse about 60, and strong as a rule.

After about twenty-four hours, in cases running an unfavourable course, the stupor or somnolence gives place to delirium, the patient becomes very restless, noisy, and sometimes violent. He cannot remain in one position for more than a few seconds. The temperature swings irregularly from perhaps 97° in the morning to 102° or 103° in the evening. Later, if he lives, relapses are noticed following hard on one another. Pulse generally slow but strong. Still later, about the third day the patient sinks into a stupor, gradually deepening into complete coma. The conjunctivæ become congested, and the face somewhat bloated. Herpetic eruptions may appear on the lips and face, the respiration becomes sighing, the teeth covered with sordes, and the tongue dry and brown, and the patient gradually sinks into an adynamic state which terminates in death. In most cases a yellowish discharge exuded from the mouth, nose, and eyes about twelve hours before death, and the breath sounds are obscured by loud moist râles which may be heard at some yards distance.

The malignity of the disease varies a good deal, death occurring sometimes within twenty-four hours, but the majority of deaths occurred after four or five days' illness.

The following tables show the occurrence of the commoner symptoms in thirty-two instances. The column showing the number of days each patient was sick before admission to hospital, though generally correct, cannot be vouched for in every instance, as information obtained on purely native evidence is not always accurate.

The three charts attached show the irregular character of the fever.

Morbid Anatomy.

Details of the *post-mortem* examinations made during the epidemic are given below.

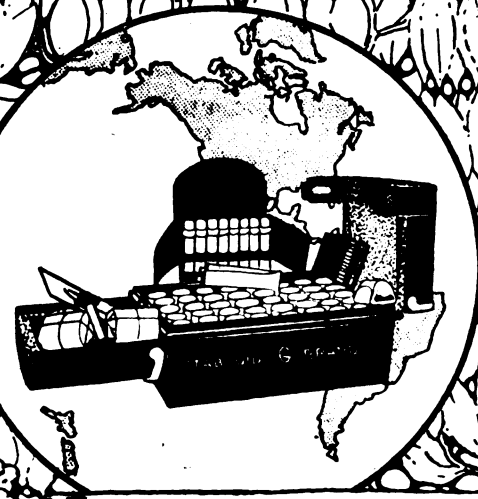
(1) James Mousa, aged 23, native clerk, died March 1st, 1905. This man died after three days' illness. The autopsy was made about twelve hours after death.

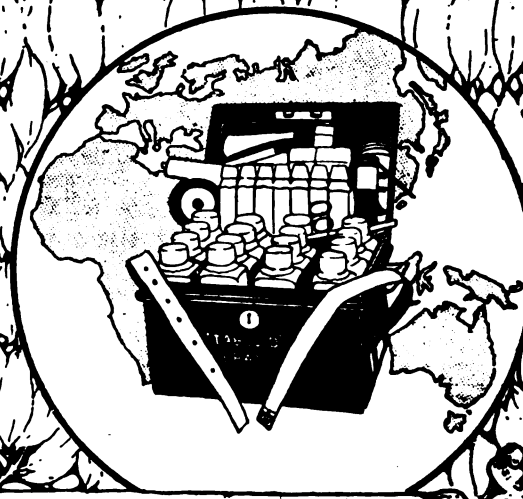
Head.—The vessels of the scalp were much injected. The pia-arachnoid was much congested. Patches of lymph and purulent exudate were scattered over the cortex and in the cortical sulci. A large quantity of purulent exudate was seen around the cerebellum and all over the base of the brain, bathing the emerging basal nerves. It also welled up around the divided cord, and where a portion of the spinal column was removed in the dorsal region patches of purulent exudate were found chiefly on the posterior surface of the cord.

Thorax.—Large fibrinous clots were seen in the auricles of the heart extending through the mitral and tricuspid valves. The ventricles were nearly empty. The venæ cavæ were distended with blood. The heart weighed 11 ozs. The lungs were both slightly congested. The pleuræ and pericardium were normal.

Abdomen.—The stomach showed a good deal of congestion, and a few petechial hæmorrhages were noted on the mucous membrane. The liver weighed 46 ozs., the left kidney 5 ozs., the right kidney 5½ ozs., and the spleen 9 ozs.

(2) Mormoh, aged 23, horse boy, died March 2nd,





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[For Contents see page iii.]

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[For London School of Tropical Medicine, see page vii.]

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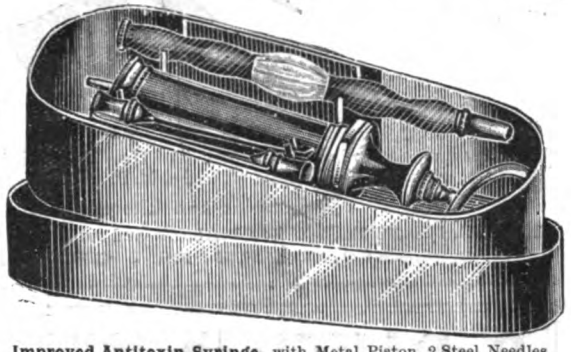
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Original Communications.

ON A POSSIBLE MODE OF COMMUNICATION OF LEPROSY[1]

for the last few years since I have had charge of the Pulau Jerajak Leper Asylum in Penang, where we have over 300 lepers, been looking for some way in which the leper bacillus could have a favourable chance of transference and growth.

[1] Read before the Penang Division of the British Medical Association, June 2nd, 1905.

Itch Insect the Possible Carrier of Leprosy.

I have for many years noted the almost universal occurrence of itch in lepers, but I fear that, until a few years ago, I only looked on this as one of the dirt conditions which might be expected in those who have d to in life, and so get careless of In connection with this I have patients in the Pauper Hospital, .

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n this occasion going any further tion of leprosy or to refer in any theories advanced by different have Roman Catholics at Pulau ght to mention that forty-one of converted on the island; of the are Eurasians, who probably con- om the sister of one of them who r ward on Penang Island; the naman, one a Tamil, are the sons . With reference to occurrence oman Catholics generally, it may conditions exist elsewhere.

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IL APPLICATION OF PRE- URES AGAINST BERI-BERI.

WRIGHT, M.D., C.M.(McGill).

titute for Medical Research, Federated Malay States.

BSTRACT IV.

Hygiene, vol. v., No. 2. April, 1905.)

BERI-BERI is an acute infectious disease with a definite primary lesion.

The reasons which led me to this conclusion are: (1) That the disease begins after an incubation period of ten to twenty days, with more or less marked symptoms of gastro-duodenal irritation, often diagnosed as simple indigestion; (2) that the gastro-duodenal syndrome is accompanied or soon followed by various

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Original Communications.

ON A POSSIBLE MODE OF COMMUNICATION OF LEPROSY.[1]

By T. C. Mugliston, M.D.

Colonial Surgeon, Penang.

I bring forward these few ideas with considerable diffidence, and solely with the hope that the attention of others dealing with large masses of lepers may have their attention directed towards what, I suggest, is a plausible cause of the propagation of leprosy; and that in dealing with the variety of causes, strenuously urged by eminent authorities, my imperfect ideas may be given a small place in their researches.

In investigating the origin of a disease, I think it is logical to search for the primal cause of the disease, and if such be discernible to follow its action.

In leprosy we have in all types but one kind of bacillus and we may accept this as the primal cause of the disease, similarly to the way we accept the tubercle bacillus (from which it is difficult to differentiate it) as the primal cause of tubercle of the lungs, &c.

This being accepted, we have to enquire how this primal cause is introduced into the tissues.

We all know that the microbes of different diseases have different degrees of readiness of introduction. Thus, for example, the anthrax bacillus is welcomed with avidity by any absorbing surface, whereas that of tubercle is more difficult of transference. Whether this is due to increased vigour of the bacillus itself, or to less resistance through some hereditary predisposition of the part attacked or not, there are various opinions,

I have always looked on leprosy as one of the more difficult diseases to communicate.

We see healthy attendants living in close communion with lepers for years without contracting the disease, in a way that would not be possible say in the case of patients suffering from tubercle of the lungs.

I have known a dresser contract the disease in a leper hospital, but this is rare, and what I am coming to may explain it.

If we accept this difficulty of communication as a fact, we have to look further for the cause than the casual touching of an absorbing sore on an attendant's hand by the discharges from a leprous sore. We must look for some instance where the leprous bacillus is kept in apposition with an absorbing surface for a much longer period than the above, and where it will be under more favourable conditions for growth than on the hands of an attendant or dresser who understands the importance of cleanliness.

I have for many years, both when in charge of the male and female leper hospitals in Singapore, and for the last few years since I have had charge of the Pulau Jerajak Leper Asylum in Penang, where we have over 300 lepers, been looking for some way in which the leper bacillus could have a favourable chance of transference and growth.

[1] Read before the Penang Division of the British Medical Association, June 2nd, 1905.

Itch Insect the Possible Carrier of Leprosy.

I have for many years noted the almost universal occurrence of itch in lepers, but I fear that, until a few years ago, I only looked on this as one of the dirt conditions which might be expected in those who have little to look forward to in life, and so get careless of their surroundings. In connection with this I have found that of 400 patients in the Pauper Hospital, twenty-five have itch.

Later, as I began to recognise from various facts the communicability of the disease, it occurred to me that here we had an almost ideal method of—shall we say—inoculation, and I began to make enquiries on these lines.

I find that of seventy-seven lepers admitted from January 1st to May 31st, 1905, forty-four had itch on admission, eleven more remembered having itch, and twenty-two could not remember.

When we take the life-history of the *Acarus scabei*, we see that the way it burrows under the cuticle, and remains in a position for a considerable time where the conditions are most favourable for the growth of the leprous bacilli with which it is covered, coming as it does from the part of the leper where the leprous bacilli are most numerous and vigorous, it is, I think, fair to assume that this is a possible way of communicating the disease.

I do not propose on this occasion going any further into the large question of leprosy or to refer in any way to the various theories advanced by different observers, but as we have Roman Catholics at Pulau Jerajak, I think it right to mention that forty-one of the forty-seven were converted on the island; of the four remaining, two are Eurasians, who probably contracted the disease from the sister of one of them who is in the female leper ward on Penang Island; the other two, one a Chinaman, one a Tamil, are the sons of Christian parents. With reference to occurrence of leprosy amongst Roman Catholics generally, it may be found that similar conditions exist elsewhere.

I am very sorry to have to present this paper in so imperfect a state, but I wish to draw attention to this idea of communication of leprosy. It may be possible to decide whether it is a special form of animal that conveys the disease or simply the ordinary itch insect, which, again, may have the leprous bacillus *in* or simply *on* its tissues.

THE SUCCESSFUL APPLICATION OF PREVENTIVE MEASURES AGAINST BERI-BERI.

By Hamilton Wright, M.D., C.M.(McGill).

Late Director of the Institute for Medical Research, Federated Malay States.

Abstract IV.

(From the *Journal of Hygiene*, vol. v., No. 2, April, 1905.)

Beri-beri is an acute infectious disease with a definite primary lesion.

The reasons which led me to this conclusion are: (1) That the disease begins after an incubation period of ten to twenty days, with more or less marked symptoms of gastro-duodenal irritation, often diagnosed as simple indigestion; (2) that the gastro-duodenal syndrome is accompanied or soon followed by various

degrees of sensori-motor and autonomic paralysis; (3) that this syndrome lasts from twenty to forty days, during which time death may ensue (acute pernicious and acute beri-beri), and that otherwise the cases either recover altogether or pass into a state of residual paralysis. I have made a large number of *post-mortem* examinations upon beri-beri cases, and have found that only in the acute stage of the disease autopsies showed a more or less marked gastro-duodenitis, with hæmorrhagic injection of the crests of the valvulæ conniventes. Microscopically a varying degree of necrosis of the mucosa was discovered, accompanied by more or less marked signs of acute inflammation, and in the necrosed mucosa a special bacillus of constant morphological character was found. These changes were not observed in the residual stage of the disease; and I believe that beri-beri is thus analogous to diphtheria, in that it is an acute disease with a definite local lesion, from which a toxin is disseminated throughout the body.

Although I have not actually demonstrated that the bacillus seen in the gastric and duodenal mucous membrane escapes in the intestinal discharges, I have assumed both that this is the case and that it is by this means that the spread of beri-beri takes place.

Acting on these conclusions, I made in 1902 certain recommendations with reference to the mode of life and hygienic surroundings of the prisoners in the Kuala Lumpur gaol. More than two years have elaped since the application of the preventive measures which I advocated was begun—time enough to test their efficiency. I have been unable myself to watch the effect of the new *regime*; I am therefore greatly indebted to my successor, Dr. C. W. Daniels, for a report of the results, from which I have quoted freely in the following account.

The various hygienic reforms which came into force between May and September, 1902, were as follows:—

(1) All prisoners were employed during the greater part of the day at extramural work.

(2) The whole gaol was thoroughly ventilated, all the air inlets and outlets being enlarged.

(3) The gaol has been thoroughly disinfected several times.

(4) Under the old *regime* the prisoners defæcated and urinated in their cells.

(5) The prisoners formerly ate their meals with their fingers, in their cells. This source of infection has been ended in the gaol. Since May, 1902, all meals except the evening meal at 5 p.m. are partaken of outside the cells. Since April 9th, 1904, all meals have been eaten outside of the cells.

These reforms were instituted between May and September, 1902, and it is fair to assume that they became effective about September. As a result the number of acute cases fell from 28 in September, 1902, to none in February, 1903, and for seven consecutive months no fresh case occurred. Towards the end of 1903 four cases occurred; of these two had been in gaol for two months, and one for thirty-seven days. If we admit the possibility of an incubation period of two months, it is possible that these patients contracted the disease before admission to the gaol. In the first four months of 1904 only three certain cases of acute beri-beri occurred; two of them had been in gaol for seven months and one for over a year.

The disappearance of the disease was not due to a general diminution of the disease throughout the Malay Peninsula, as the reports show that, while extramural beri-beri remained epidemic, the intramural disease diminished and finally disappeared.

The abolition of beri-beri in the gaol hospital has been attained by hygienic reforms founded on the view which I have advanced that the infective agent is contained in the excreta of the patient during the acute stage of the disease and that infection results from fæcal contamination. I would suggest that, as an additional preventive measure, the stools of those suffering from acute beri-beri be disinfected.

It should not be forgotten that, from May 1st, 1902, to the present time, the prisoners have been on a diet of lower grade in the nitrogen content than obtained during the previous year or so, during which beri-beri was almost epidemic. This fact should set at rest the question of diet as a factor in the causation of beri-beri.

CEREBRO-SPINAL MENINGITIS AT ZUNGERU AND YOLA IN NORTHERN NIGERIA.

(*Forwarded for publication by the courtesy of the Secretary of State for the Colonies.*)

REPORT ON AN OUTBREAK OF EPIDEMIC CEREBRO-SPINAL MENINGITIS IN ZUNGERU DURING FEBRUARY AND MARCH, 1905.

By the Principal Medical Officer of the District.

The increased mortality among the natives in and around Zungeru, and rumours of an excessive death-rate in Kano, Zaris, Ilorin, and several of the smaller villages attracted much attention about the middle of February. Small-pox was epidemic at the time, and at first it was thought that the deaths were due to this disease, the natives themselves calling the sickness "small-pox fever." It was gathered that outbreaks such as this, though not of annual occurrence, were by no means uncommon during the first three months of the year, and were supposed to be due to the excessive dryness of the season. All evidence pointed to an enormous case mortality, and the natives stated that in some years cattle, in others men, and sometimes both cattle and men, were attacked.

At first no cases of the disease could be found, all the earlier cases running such a rapid course that death occurred within a few hours, and owing to the native's habit of hiding himself when ill, the first intimation usually received was that a dead body had been found, and no information was obtainable as to what had been the cause of death. *Post mortems* were made where possible, but nothing was discovered but intense congestion of the vessels of the cerebral cortex.

A case of cerebro-spinal meningitis was admitted to the native hospital earlier in the month, and this was thought to be a sporadic one, but after the lapse of a week many nervous cases arrived, all corresponding more or less with the first, and on February 28th a native clerk was admitted with the classical symptoms

of the disease. He died within twenty-four hours of admission, and the diagnosis was fully borne out at the autopsy. Epidemic cerebro-spinal meningitis was then decided on as a working hypothesis for the investigation of the epidemic. The health officer was instructed to search the native town, and send into hospital all cases of a doubtful nature for observation, and a house-to-house visitation was made.

Eight cases of the disease were discovered, which [illegible] Pulse generally slow but strong. Still

After about twenty-four hours, in cases running an unfavourable course, the stupor or somnolence gives place to delirium, the patient becomes very restless, noisy, and sometimes violent. He cannot remain in one position for more than a few seconds. The temperature swings irregularly from perhaps 97° in the morning to 102° or 103° in the evening. Later, if he lives, relapses are noticed following hard on one

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The Maintenance of Health in the Tropics

BY

W. J. SIMPSON, M.D., F.R.C.P.

Professor of Hygiene, King's College, London; and Lecturer on Tropical Hygiene at the London School of Tropical Medicine



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A FEW PRESS OPINIONS.

"'The Maintenance of Health in the Tropics,' by Professor W. J. Simpson, forms a very interesting and instructive little manual. The preface explains the scope of the book in a few words, namely, a small manual dealing with personal hygiene in a simple and popular manner for laymen and young medical men visiting the Tropics or residing therein. Such a handbook has been much required; it will supply a distinct demand, and will answer a question so often asked by the intending visitor to the Tropics, 'Where can I get a book that will tell me briefly what things I have to avoid, and how I can look after my health when I go abroad?' No one is better qualified than Professor Simpson, with his wide tropical experience, to write such a book, and after reading it carefully it is evident he has succeeded in his mission. The first three chapters deal with climate, personal precautions, diet, drinking water, and dwelling-houses; the fourth, perhaps the most important in the book, with the illnesses of the Tropics and their prevention; the fifth with snake and insect bites, and the last with wounds and medical equipment. A word on tents, hammocks, and camp beds in the chapter on dwelling-houses would not have been amiss for the sportsman, naturalist, and prospector whose bent may lead him to the wilds of Africa or other uncivilized regions. The part of the manual dealing with malaria and its prevention is clearly put, and should convince the most sceptical. Here the author puts his finger on one of the most important points of mosquito prophylaxis, namely, that in addition to individual efforts measures must also be taken by the local authority. Unless this is done success will never be obtained. It is useless, as the author remarks, to clear a house of mosquitos, if the neighbour over the wall is to go on in a state of apathy and let mosquitos by thousands breed in his insanitary compound. The prevention of plague, cholera, typhoid fever, dysentery, and other diseases is clearly discussed. The treatment of stings and bites of insects, by no means the least important of tropical troubles, is dealt with. A very good protective agent against chiggers, not mentioned in the book, is to sprinkle the floors with an infusion of tobacco leaves, and also to put them in boots and slippers. The manual may be heartily recommended to all going abroad; it may be read with interest on the voyage, and will save much illness and trouble when the destination is reached."—*British Medical Journal, July* 8, 1905.

"A manual prepared at the request of the Committee of the London School of Tropical Medicine. It should be understood that this is not a technical work intended for professional use, but adapted to the needs of the ordinary resident in tropical or sub-tropical regions. One of the most important discoveries in the region of medicine in modern times is that the mosquito is the efficient cause of yellow fever and filariasis. A combination of private and public effort can go a long way towards stamping out these diseases that certainly would have been thought the wildest of fancies five-and-twenty years ago."—*The Spectator.*

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of the disease. He died within twenty-four hours of admission, and the diagnosis was fully borne out at the autopsy. Epidemic cerebro-spinal meningitis was then decided on as a working hypothesis for the investigation of the epidemic. The health officer was instructed to search the native town, and send into hospital all cases of a doubtful nature for observation, and a house-to-house visitation was made.

Eight cases of the disease were discovered, which were placed in a temporary segregation hospital, and sanitary measures were taken to prevent its further spread as far as possible, these measures consisting in burning or disinfecting all houses from which cases had been taken, in opening up the more crowded portions of the town, and in isolating all fresh cases. I append a chart which shows graphically the admissions, deaths, mean temperature, and relative humidity during March.

Etiology.—During the earlier part of the year many fires had occurred in the native town, destroying great numbers of the grass huts and driving the inhabitants into the remaining houses, with the result that portions of the town had become greatly overcrowded. This condition of affairs undoubtedly contributed to the spread of the disease after its introduction, but whether the disease is endemic in a mild form and occasionally becomes epidemic, or whether the disease has been introduced from without, there is no evidence to show. The former is probably the correct explanation, though no previous case has been recorded in Northern Nigeria.

Clinical Picture.—The following is a clinical picture of the average case founded on the signs and symptoms observed in the first seventeen cases which were admitted to the segregation hospital.

The patient when first seen is lying on his side with one or both knees slightly drawn up, his back is arched backwards, and his head retracted. He is generally only semi-conscious, but can be roused, and then moans and stares rather wildly, with an anxious expression on his face. If he can be induced to rise he does so in a characteristic manner, first rising to his knees and then to his feet, keeping the head, neck, and trunk rigid during the operation. If an effort is made to raise the head when he is recumbent the whole of the head, neck, and trunk is raised by the same action, and when having to enter a low doorway he sinks gradually to his knees, and in this attitude shuffles in with head thrown back and spine rigid. When in the erect posture he sways and grasps at the nearest means of support. On being questioned he complains of severe pain at the back of the head, and of pain in the lumbar and dorsal regions. Pressure on the neck below the occiput on the posterior neck muscles and on the cervical spine is obviously painful, but tenderness of the dorsal and lumbar parts of the spine is not so marked, though generally present. Pains in the limbs are by no means uncommon. Kernig's sign could be elicited in nearly every case, and photophobia was a pretty constant symptom. Strabismus was absent, though curiously enough it was present in the first case observed, where it had existed from childhood. Vomiting was a pretty constant symptom in the earlier cases. The temperature is generally not high, running from 100° to 103°. Pulse about 60, and strong as a rule.

After about twenty-four hours, in cases running an unfavourable course, the stupor or somnolence gives place to delirium, the patient becomes very restless, noisy, and sometimes violent. He cannot remain in one position for more than a few seconds. The temperature swings irregularly from perhaps 97° in the morning to 102° or 103° in the evening. Later, if he lives, relapses are noticed following hard on one another. Pulse generally slow but strong. Still later, about the third day the patient sinks into a stupor, gradually deepening into complete coma. The conjunctivæ become congested, and the face somewhat bloated. Herpetic eruptions may appear on the lips and face, the respiration becomes sighing, the teeth covered with sordes, and the tongue dry and brown, and the patient gradually sinks into an adynamic state which terminates in death. In most cases a yellowish discharge exuded from the mouth, nose, and eyes about twelve hours before death, and the breath sounds are obscured by loud moist râles which may be heard at some yards distance.

The malignity of the disease varies a good deal, death occurring sometimes within twenty-four hours, but the majority of deaths occurred after four or five days' illness.

The following tables show the occurrence of the commoner symptoms in thirty-two instances. The column showing the number of days each patient was sick before admission to hospital, though generally correct, cannot be vouched for in every instance, as information obtained on purely native evidence is not always accurate.

The three charts attached show the irregular character of the fever.

Morbid Anatomy.

Details of the *post-mortem* examinations made during the epidemic are given below.

(1) James Mousa, aged 23, native clerk, died March 1st, 1905. This man died after three days' illness. The autopsy was made about twelve hours after death.

Head.—The vessels of the scalp were much injected. The pia-arachnoid was much congested. Patches of lymph and purulent exudate were scattered over the cortex and in the cortical sulci. A large quantity of purulent exudate was seen around the cerebellum and all over the base of the brain, bathing the emerging basal nerves. It also welled up around the divided cord, and where a portion of the spinal column was removed in the dorsal region patches of purulent exudate were found chiefly on the posterior surface of the cord.

Thorax.—Large fibrinous clots were seen in the auricles of the heart extending through the mitral and tricuspid valves. The ventricles were nearly empty. The venæ cavæ were distended with blood. The heart weighed 11 ozs. The lungs were both slightly congested. The pleuræ and pericardium were normal.

Abdomen.—The stomach showed a good deal of congestion, and a few petechial hæmorrhages were noted on the mucous membrane. The liver weighed 46 ozs., the left kidney 5 ozs., the right kidney 5½ ozs., and the spleen 9 ozs.

(2) Mormoh, aged 23, horse boy, died March 2nd,

SYMPTOMATIC TABLE NO. 1 OF SEVENTEEN EPIDEMIC CASES.

No.	Name	No. of days sick before admission	Date of admission sick	Date of discharge	Age	Sex	Occupation	Race	Headache	Retraction of head	Tenderness of nape and neck	Tenderness of spine	Delirium	Coma	Kernig's Sign	Herpes	Photophobia	Conjunctivitis	Discharge from eyes	Vomiting	Remarks
1	Jundi ..	2	14.2.05	..	21	M	Pauper	Yoruba	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	Yes	Doing well.
2	Ari Kukuwa	1	17.2.05	..	17	M	Recruit	..	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,, ,, but quite deaf.
3	Kolo ..	1	27.2.05	..	22	M	Soldier	Yoruba	,,	,,	,,	,,	,,	,,	,,	,,	No	Yes	,,	,,	,, ,, ,, ,,
4	Marmah ..	2	28.2.05	..	32	M	Interpreter	,,	,,	,,	,,	,,	,,	,,	,,	Labialis	Yes	,,	,,	No	,, ,, ,, ,,
5	Balon Flingy	3	25.2.05	..	24	M	Policeman	,,	,,	,,	,,	,,	,,	Not deep	,,	No	,,	,,	,,	,,	,, ,, ,, ,,
6	Omomeji ..	1	2.3.05	5.3.05	21	M	Mason	,,	,,	,,	,,	,,	,,	Yes	Not marked	Labialis	,,	,,	Yes	Yes	Died.
7	Bamaiye ..	2	1.3.05	..	18	M	Horse boy	Housa	,,	,,	,,	,,	,,	,,	,,	Labialis & facialis	,,	,,	,,	,,	
8	Saba ..	2	2.3.05	..	20	..	Pauper	Nupe	,,	,,	,,	,,	,,	,,	,,	No	,,	,,	,,	,,	Sinking.
9	Jemma ..	3	2.3.05	..	23	..	,,	Yoruba	,,	,,	,,	No	No	,,	Yes	,,	,,	,,	,,	No	
10	Yanna ..	2	2.3.05	7.3.05	35	F	Trader's wife	Nupe	,,	,,	,,	Yes	Yes	,,	,,	,,	No	No	No	Yes	Died.
11	Salami ..	..	2.3.05	2.3.05	22	..	Pauper	Yoruba	?	,,	?	?	No	,,	No	,,	?	Yes	Yes	,,	Admitted *in extremis*.
12	Amadu ..	2	2.3.05	..	21	..	,,	,,	Yes	,,	Yes	Yes	Yes	,,	Yes	Labialis	Yes	No	No	No	
13	Adawnyi ..	3	3.3.05	..	20	..	,,	,,	,,	,,	,,	,,	No	,,	,,	No	,,	,,	,,	Yes	Developed parotitis.
14	Alabi ..	2	3.3.05	7.3.05	17	..	Steward	,,	,,	,,	,,	,,	Yes	,,	,,	,,	,,	,,	,,	,,	Died.
15	Balali ..	2	3.3.05	..	20	..	Labourer	,,	,,	,,	,,	,,	,,	No	Not marked	,,	,,	Yes	,,	No	
16	Esa	2	5.3.05	7.3.05	23	..	Pauper	Nupe	..	,,	..	..	No	Deep	Yes	,,	..	,,	Yes	Yes	Died ; admitted *in extremis*.
17	Magagi ..	1	6.3.05	..	25	..	Ex-slave	Housa	Yes	,,	Yes	Yes	No	No	Not marked	,,	No	No	No	No	Doing well.

POST-MORTEM EXAMINATIONS OF CASES OF CEREBRO-SPINAL MENINGITIS.

No.	Name	Age	Sex	Race	Date of Admission	Date of Death	Duration of illness in days	Membranes: Dura	Membranes: Pia	Brain: Convexity	Brain: Base	Brain: Interior	Lungs	Heart	Liver	Spleen	Condition of Body	Hours after death P.M. made	Temperature P.M.	Remarks
1	Sgt. Nettle-fold	..	..	E	..	24.3.05	..	Thick'ning	Congest. and thick'ning	Pus on surface	Pus	Pus on ventricle	..	..	..	..	Advanced decomposition	51		
2	Morro ..	..	..	..	..	25.3.05	..	Congest.	Congest.	..	..	..	Both pneumonic	..	Inflamed	Congest.	Well nourished	..	..	Found dead in town.
3	Digi ..	14	..	Yor.	23.3.05	25.3.05	2	..	,,	Covering of lymph	Pus	Congest.	Congest.	..	..	..	,,	6		
4	Popola ..	25	..	,,	27.3.05	27.3.05	8 hrs.	..	,,	Pus	..	..	,,	..	Congest.	..	,,	9		
5	Ogomula ..	36	F	,,	27.3.05	28.3.05	1	Thick'ning	,,	,,	..	Distension of ventricles	,,	..	..	..	Emaciat'd	8	..	There was considerable destruction of cortex from ulceration.
6	Kaderi ..	32	..	,,	26.3.05	28.3.05	2	..	..	,,										
7	Brihima ..	18	..	,,	21.3.05	29.3.05	8	Thick'ning	Congest.	,,	Pus	Pus in ventricles	Congest.	..	Congest.	Congest.	Well nourished	1	Very high	
8	Sariki Dogo Zaria	27	..	H	28.3.05	30.3.05	2	,,	,,	,,	,,	..	Old pleurisy, congest.	..	,,	..	,,	6		
9	Sanusi ..	6	..	Y	27.3.05	31.3.05	4	Marked thick'ning	Intense congest.	,,	Pus	Pus in ventricles	..	..	..	..	Emaciat'd	1		
10	Lawani I. ..	20	..	,,	31.3.05	1.4.05	2	..	Congest.	,,	,,	,,	Congest.	..	Congest.	Congest.	Well nourished	4		
11	Lawani II...	29	..	,,	31.3.05	2.4.05	2	Thick'ning congest.	Thick congest.	,,	,,	..	Congest.	..	..	..	,,	6		
12	Faluma ..	30	F	,,	30.3.05	3.4.05	3	..	Intense congest.	,,	,,	Pus in ventricles, distended	Slight congest.	Enlarged, fatty.	Congest.	Congest.	,,	1	High	

1905. This man died after four days' illness. The autopsy was made about three hours after death.

Head and Spine.—The pia-arachnoid was deeply injected. Patches of purulent exudation were found over the whole brain, markedly over the pons, cerebellum and medulla, and about the basal nerves. The brain substance was anæmic. A small quantity of purulent material was seen in the posterior cornua of the right lateral ventricle. Pus was found all around the divided cord and a thick layer under the congested

4 ozs. of reddish fluid, mixed with bile. The rest of the alimentary tract was normal. The right kidney weighed 4½ ozs., the left 4 ozs. The spleen weighed 7 ozs.

(3) Djoah, aged 7, female, died March 1st, 1905. This child had been sick four days. The autopsy was made twelve hours after death. *Post-mortem* rigidity was absent.

Head and Spine.—The pia-arachnoid showed much congestion. The whole surface of the cortex was

SYMPTOMATIC TABLE No. 2 OF THIRTY-TWO EPIDEMIC CASES.

Name	Date of admission	Date of discharge	Age	Sex	Occupation	Race	Headache	Retraction of head	Tenderness of nape and neck	Tenderness of spine	Delirium	Coma	Kernig's sign	Herpes	Conjunctivitis	Discharge from eyes	Remarks; died
Sumanu ..	11.3.05	..	24	..	Lab'rer P.W.D.	Yoruba	Yes	..	Yes	Yes	..	..	No	..	..	..	15.3.05
Eyaye ..	11.3.05	25.3.05	..	..	Pauper	..	,,	Yes	..	..	..	..	,,				
Phillips ..	15.3.05	..	22	..	,,	..	..	,,	..	..	..	Unconscious	Yes	..	..	..	18.3.05
Ginabu ..	18.3.05	..	25	F	,,	..	..	,,	..	..	..	,,	,,	Yes	..	..	19.3.05
Adebum ..	,,	..	23	..	,,	..	..	,,	..	..	..	,,	..	..	..	..	20.3.05
Obuaday ..	,,	..	28	..	,,	..	..	,,	..	..	Yes	..	Yes	..	Yes	..	25.3.05
Gana.. ..	,,	..	17	..	,,	Yoruba	..	,,	..	..	,,	..	,,	..	..	Yes	25.3.05
Ojile	21.3.05	..	20	..	Tel. messenger	,,	..	,,	..	..	..	Unconscious	..	..	..	..	24.3.05
Ibrihima ..	,,	..	22	..	Pauper	,,	..	,,	..	..	..	,,	Yes				
Alowa ..	22.3.05	..	26	..	Police	,,	..	,,	..	..	..	,,	,,	..	..	..	27.3.05
Anknoun ..	,,	..	30	..	Pauper	..	..	..	..	..	..	Yes	..	..	..	..	22.3.05
Owdu Keffi ..	23.3.05	..	25	..	Police	..	..	Yes	..	..	..	Unconscious	Yes	Yes	..	..	24.3.05
Desomu ..	24.3.05	28.3.05	25	..	Carrier	Yoruba	Yes	..	Yes	..	..	..	..	,,			
Brimah ..	,,	..	18	..	Tel. messenger	,,	..	Yes	..	..	..	Unconscious	..	..	..	..	29.3.05
Momada ..	23.3.05	..	21	..	Niger Co.	Nupe	..	,,	Yes	Yes	..	..	Yes	Yes	Yes		
Agabona ..	,,	..	28	..	,,	,,	..	,,	..	..	..	Unconscious	Yes				
Esa	,,	..	50	..	Pauper	..	..	,,	..	..	..	,,	..	..	..	..	23.3.05
Danbo Vano	24.3.05	..	22	..	,,	..	..	,,	..	..	..	,,	..	..	..	..	26.3.05
Digi	,,	..	14	..	Boy Police	Yoruba	..	,,	..	..	..	,,	..	..	..	..	25.3.05
Awodu Boukbi	,,	..	24	..	Soldier	Housa	Yes	,,	Yes	..	..	..	No				
Musa Lago ..	25.3.05	..	26	..	Soldier	,,	,,	..	,,	..	..	..	,,	..	Yes	..	Acute pharyngitis
Popola ..	27.3.05	..	25	..	Police	Yoruba	..	Yes	..	..	..	Unconscious	Yes	..	..	..	27.3.05
Kaderi ..	26.3.05	..	32	..	Lab'rer P.W.D.	,,	..	,,	..	..	..	,,	..	..	..	..	28.3.05
Seberrho ..	,,	..	10	..	Pauper	,,	..	,,	Yes	Yes	..	..	Yes				
Ogonsla ..	29.3.05	..	36	F	,,	,,	..	,,	,,	,,	..	Semi-uncon.	,,	..	Yes	Yes	28.3.05
Sanusi ..	,,	..	10	..	,,	,,	..	,,	,,	..	..	..	,,	..	..	..	31.3.05
Sani Gunda..	28.3.05	..	18	..	Soldier	Housa	Yes	,,	,,	..	..	..	No				
Sariki Dogo Zaria	,,	..	27	..	,,	,,	..	..	..	..	..	Yes	..	..	..	..	30.3.05
Fatuma ..	30.3.05	..	25	..	Pauper	Yoruba	Yes	Yes	Yes	..	..	Semi-uncon.	Yes	Yes	..	..	3.4.05
Inday ..	,,	..	18	..	Lab'rer P.W.D.	,,	,,	,,	,,	Yes	..	..	,,				
Lawani I. ..	31.3.05	..	20	..	,,	,,	..	,,	..	..	Yes	..	,,	..	..	..	1.4.05
Lawani II. ..	,,	..	29	..	,,	,,	..	,,	..	..	,,	..	,,	..	..	..	2.4.05

membranes of the lumbar cord behind, the exudate being less marked on the anterior surface.

Thorax.—The heart weighed 12 ozs. The left ventricle was hypertrophied, and the right dilated. The mitral valves showed thickening, the ventricles were empty. The auricles contained large fibrinous clots extending through the mitral and tricuspid valves, the venæ cavæ were engorged, the pericardium was congested and coated with patches of lymph. It contained about 2 ozs. of reddish-yellow fluid. Both lungs were much congested. The pleuræ were normal.

Abdomen.—The liver weighed 50 ozs. The stomach showed a good deal of congestion, and many petechial hæmorrages on the mucous surface. It contained

covered with purulent exudate. The cerebellum and medulla were thickly coated and a thick layer was seen over the base of the brain and around the cut cord. Congestion of the membranes of the dorsal cord was likewise seen, as well as patches of exudation over the posterior surfaces, though the anterior surface was free from exudate.

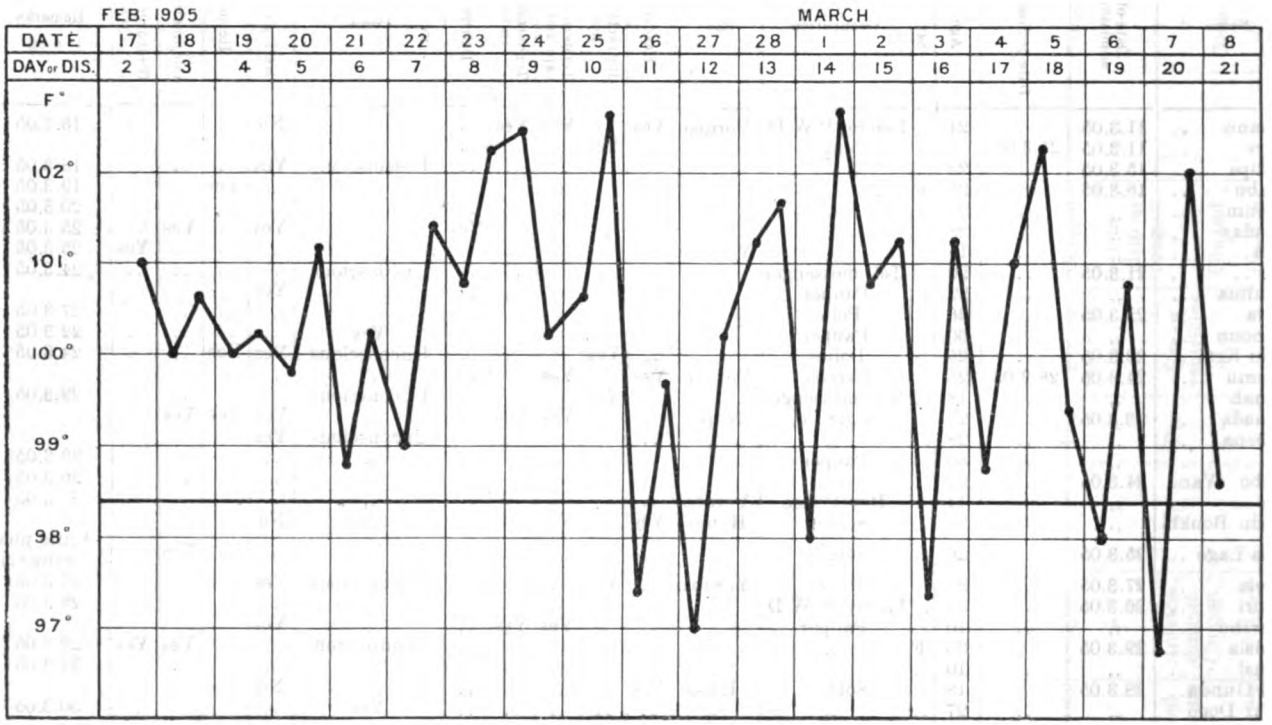
Thorax.—The heart weighed 5½ ozs. The ventricles were empty. The right auricle contained a large clot, the left was empty. The venæ cavæ were engorged with blood. The lungs, pleuræ, and pericardium were normal.

Abdomen.—Except that the stomach contained a coating of glairy mucus, the abdominal organs showed nothing worthy of note.

(4) Brimah, aged 18, horse boy, died March 1st, 1905. This boy had been ill since the February 15th. The autopsy was made three hours after death.

Head and Spine.—The brain was covered with patches of purulent exudate. The pia-arachnoid was injected, but not markedly. The basal nerves were bathed in the exudate, and it was seen in great quantity over the pons, medulla, and upper portion of the cervical cord. A thick layer was seen on the posterior aspect of the lumbar cord, and a smaller quantity in patches on the anterior aspect.

Thorax.—The heart weighed 10 ozs. The right auricle contained a large fibrinous clot, the left a smaller clot. The venæ cavæ were full of blood.



Temperature chart of No. 2 in symptomatic table.

Pericarditis existed to a marked degree. The lungs were both congested, the right markedly.

Abdomen.—The stomach was coated with glairy mucus, and showed many small petechial hæmorrhages. There was also marked congestion of the inferior portion. The liver weighed 51 ozs., the right kidney 5½ ozs., and the left 5 ozs. The spleen weighed 10 ozs.

(5) Awudulai, aged 22, male pauper, died March 2nd, 1905. This man had been sick three days. Autopsy was made twelve hours after death.

Head and Spine.—A yellowish, thick fluid streamed from both eyes. Conjunctivitis was present on each side. The lips were covered with herpes, and a patch of facial herpes was seen on the left malar region. There was keratitis present in both cornea. The pia-arachnoid was much injected, and patches of purulent exudate covered the sides and top of the brain, which rested in a bath of the same material. Both ventricles (lateral) contained a small quantity of the exudate. The exudate was found in smaller quantities around the divided cord, and covering the dorsal and upper lumbar portions on their posterior aspects.

Thorax.—The heart weighed 12 ozs. The auricles contained clots, the mitral valves showed thickening, and the left ventricle hypertrophy. The venæ cavæ were engorged with blood. Pericarditis was very marked. Broncho-pneumonia was present in both lungs, and the posterior inferior portion of the left pleura was much congested.

Abdomen.—The stomach was coated with glairy mucus, and showed petechial hæmorrhage here and there in its lower part. It contained about 4 ozs. of reddish fluid. The liver weighed 49 ozs., the spleen 6 ozs., right kidney 4½ ozs., and left 4 ozs.

(6) (*a*) Native, aged 45 approximately, male, died March 3rd, 1905. Full details of this and the two cases following could not be obtained. The man was said to have sickened and died in one day. Autopsy was made about twelve hours after death.

Head and Spine.—The vessels of the scalp and pia-arachnoid were intensely injected, as also were the membranes of the dorsal cord. No purulent exudation was seen.

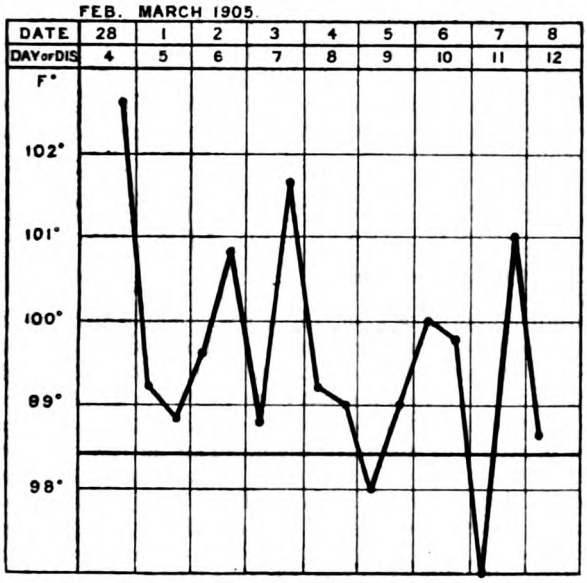
Thorax.—The heart weighed 10 ozs. The lungs were both congested, the right markedly. The pleuræ and pericardium were normal.

Abdomen.—The stomach showed a coating of glairy mucus and slight congestion. It contained a little reddish fluid. The liver weighed 50 ozs., the right kidney 5 ozs., the left 5 ozs., the spleen 9 ozs.

(*b*) Native, aged 24 approximately, male, died March

3rd, 1905. The man was said to have sickened and died in one day. Autopsy was made about thirteen hours after death.

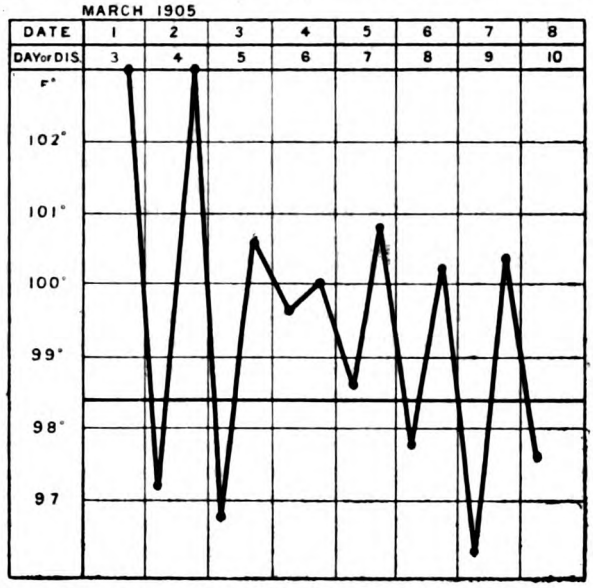
Head.—The vessels of the head and pia-arachnoid



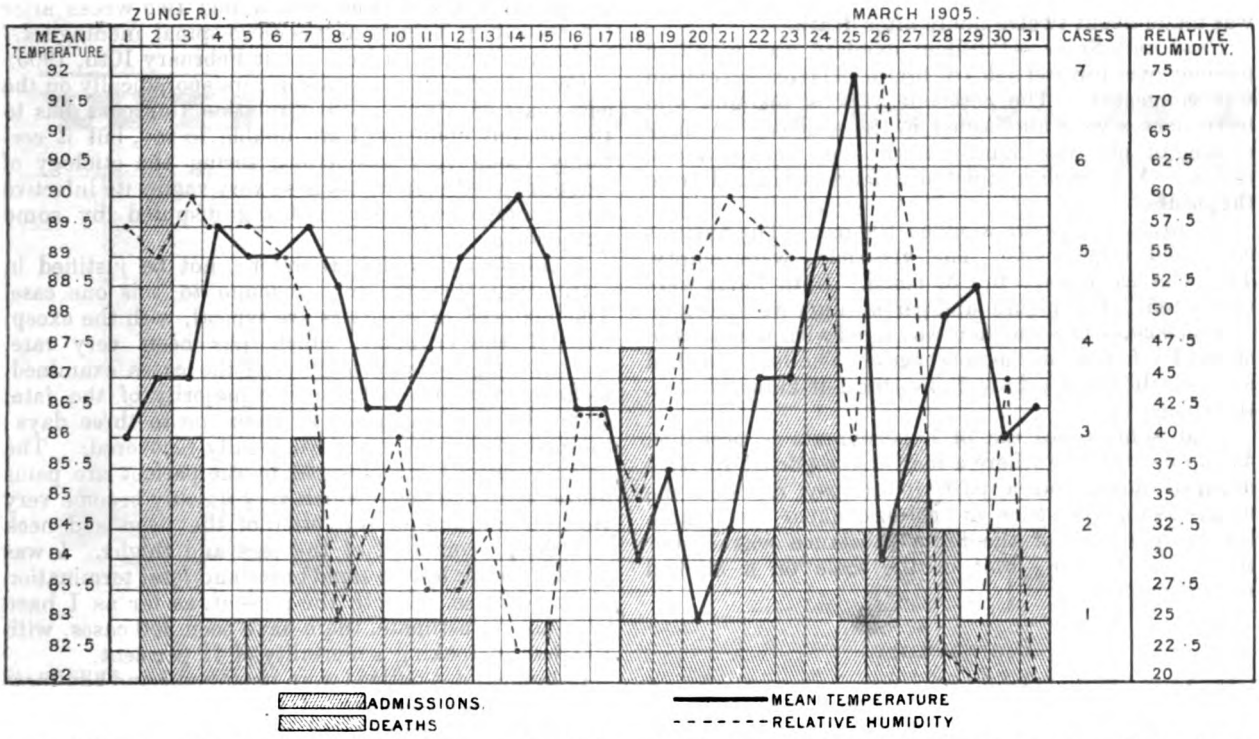
Temperature chart of No. 5 in symptomatic table.

and a coating of mucus. The liver weighed 50 ozs., the right kidney 5½ ozs., the left 5 ozs., the spleen 10 ozs.

(*c*) Native, aged 25 approximately, female, died



Temperature chart of No. 7 in symptomatic table.



showed the same intense congestion as seen in Case (*a*). The congestion of the membranes of the dorsal cord was less marked. No pus was found on the brain or cord.

Thorax.—The heart weighed 10 ozs. The right and left auricles contained clots; the venæ cavæ were engorged. The lungs both showed slight congestion.

Abdomen.—The stomach showed a little congestion,

March 3rd, 1905. This woman was said to have sickened and died in one day. The autopsy was made about twelve hours after death.

Head and Spine.—Like the other two cases, congestion of the scalp vessels and of the pia-arachnoid was very intense. The spinal membranes were also implicated, being very markedly congested.

Thorax.—The heart weighed 9 ozs. The auricles

were distended with clots. The ventricles were empty. The great veins were engorged. The pericardium showed early congestion. Both lungs were congested.

Abdomen.—The liver weighed 45 ozs., the right kidney 4½ ozs., the left 4 ozs., the spleen 6 ozs. All the abdominal organs appeared normal in character.

(7) Salami, aged 22, pauper, died March 2nd, 1905. Duration of illness not known. Autopsy made twelve hours after death.

Head.—The pia-arachnoid was much congested. The whole of the brain was covered with purulent exudate, which extended into the sulci and the longitudinal fissure. Pus was found in both lateral ventricles. The lumbar cord was found embedded in purulent exudate. Yellowish fluid exuded from the eyes.

Thorax.—The heart weighed 11 ozs. Large clots were found in the auricles. The venæ cavæ were full of blood. Pericarditis was markedly present. There was broncho-pneumonia in both lungs. The pleuræ were normal.

Abdomen.—The stomach contained about 2 ozs. of reddish fluid. The mucous membrane was coated with glairy mucus, and showed several small hæmorrhages. The lower portion showed marked congestion. The liver weighed 54 ozs., the right kidney 5½ ozs., the left 5 ozs., the spleen 10 ozs.

(8) Omamegi, aged 21, mason, died March 5th, 1905. This man was ill four days before death. The autopsy was made about twelve hours after death.

Head and Spine.—Purulent exudate was found in patches over top and sides of brain. The pia-arachnoid was congested. The cerebellum, pons, medulla, and basal nerves were all bathed in the exudate. A thick coating of pus was found over the cord in the dorsal region. A yellowish, thick discharge streamed from the orbits.

Thorax.—The heart weighed 10½ ozs. The auricles contained large clots. The ventricles were empty. The venæ cavæ were full of blood. Both lungs were congested. The pleuræ and pericardium were normal.

Abdomen.—The stomach was lined with mucus, and showed a few small hæmorrhages. The liver weighed 46 ozs., the right kidney 5 ozs., the left kidney 5 ozs., the spleen 9¼ ozs.

That some cases die of hyperpyrexia is probable, as in one instance where a man was reported to have dropped dead, and a partial autopsy revealed the unmistakable presence of cerebro-spinal meningitis, the temperature of the brain substance was higher than 110° F., the limit of the scale on a clinical thermometer.

Bacteriology.

The bacteriological evidence was inconclusive in that all the evidence obtained was derived from the morphological characters of the organisms found.

Smears were taken or films made from the nasal discharge, the purulent exudate on the brain surface, and the cerebro-spinal fluid both in the living patient and the cadaver.

At least six specimens were made of each, and stained variously by carbol-fuchsin, Jenner's stain, and Gram.

In every case diplococci were found without difficulty, which were decolourised by Gram's method.

The exudation in the brain surface was found to contain fibrous material, polynuclear leucocytes, pus cells, and diplococci, which were usually seen within the leucocytes, though occasionally free.

The nasal discharge contained numerous diplococci, but also numerous other bacilli.

No culture media were available, so that no further investigation into the character of the organisms was possible.

REPORT OF THE OUTBREAK OF CEREBRO-SPINAL MENINGITIS AT YOLA.

By Kenneth McGahey, L.R.C.P., L.R.C.S (Edin.).

About February 12th, 1905, I accidently heard that many deaths were occurring in Yola town from a disease unknown to the natives. I accordingly visited Yola, and examined a great number of those affected. I discovered that *epidemic cerebro-spinal meningitis* had broken out amongst them. The natives do not recollect, nor have they heard of, any such disease ever having occurred before. How it has been introduced I have been unable to ascertain. At Malabon and Virabon, some twenty and twenty-five miles distant respectively, I am informed that similar cases are occurring, and an Arab who passed through these places on his way from Mecca died two weeks after his arrival in Yola from "cerebro-spinal meningitis," he having arrived in Yola about February 10th, 1905.

Cerebro-spinal meningitis occurs sporadically on the east coast of Africa. What relation this case has to the present epidemic I am unable to say, but it certainly looks very suspicious, seeing the etiology of cerebro-spinal meningitis is so very vague, its infective and contagious character being disputed by some authorities.

I think one would, therefore, not be justified in attributing this present epidemic to this one case. The majority of the cases are typical, with the exception of the eruption, which has been very rare. Kernig's sign was present in all the cases examined. Delirium sets in early in the majority of the fatal cases, death taking place in from one to three days; those surviving for four days usually recovered. The first symptoms recognisable by the patient are pains in the neck and legs, which very quickly become very violent, resulting in retraction of the head and neck and flexed condition of the legs and thighs. I was greatly struck by the rapid onset and fatal termination of the disease. Up to the present, as far as I have been able to estimate, there have been 350 cases, with 150 deaths, making a mortality of 42 per cent.

Complications noticed were pneumonia and blindness (probably optic neuritis). I think the severity of the disease has greatly abated in Yola, but I now hear that several cases have occurred in the surrounding districts.

Up to the present we have had no cases at the Residency. I have issued instructions that the soldiers, police and staff are to have as little intercourse as possible with the inhabitants of Yola. Isolation of the patients in Yola has been attempted. I am urging the Emir to carry out my wishes.

THE

Journal of Tropical Medicine

SELECTIONS

FROM

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JULY 15, 1905.

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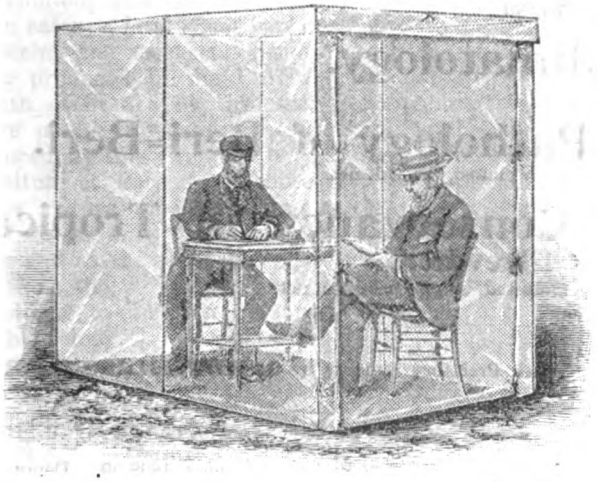
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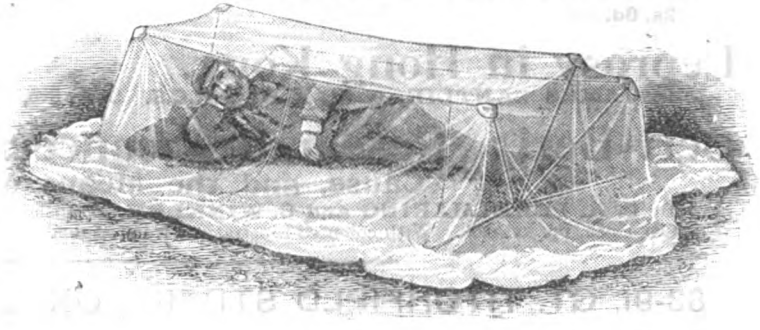
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Colonial Medical Reports.—No. 11—Hong Kong *(continued).*

At the end of the first cleansing it was determined by the Board to continue it throughout the year, this was done until September, and in this way the Chinese houses were thoroughly dealt with at least two or three times.

In the winter of 1904-1905, the cleansing commenced on November 1st, and was completed by February 1st of this year; during this time 12,677 houses in Victoria, Kowloon, Shaukiwan and Aberdeen, containing 34,193 floors, have been dealt with in this way, and 805 cartloads of rubbish have been removed. The total cost to the Government for the necessary fuel, soft soap, &c., was only 1,131·32 dollars.

The inhabitants are assisted by the Plague Staff, whose services are thus utilised in non-epidemic times.

It is intended to continue this work throughout the summer.

Rats.—Twenty-one thousand nine hundred and seven rats were caught during the year, of these 993 were found to be plague infected.

From Dr. Hunter's researches it is evident that it is the rats which bridge over the period between successive outbreaks; during all the winter months cases of plague-infected rats are found, although the disease is at this time practically non-existent in man. The method by means of which plague is spread from rat to rat and from rat to man has yet to be worked out.

An attempt was made early in the year to kill off the rats with Danysz' virus; the strain, however, must have become attenuated, as although it was freely distributed, and there were evidences of its having been eaten, a fatal effect was not induced.

Seeing the successful results which have been last year produced in the Province of Charente in the South of France by Professor Roux, where the rats were practically exterminated by the fatal epidemic induced by this virus, we have applied to the Pasteur Institute at Paris for a more virulent strain of the virus, and we hope to have better results this year.

If we can only diminish in this way the number of rats and at the same time persuade the Chinese to continue the periodical cleansing, we shall do much, I am sure, to diminish the annual prevalence of plague in this colony.

We cannot expect, however, to be free of the disease until many of the insanitary and filthy dwellings in the crowded quarters of the city have been demolished and reconstructed on approved sanitary principles.

With this end in view the Government is voting an annual sum of money for the resumption of these insanitary areas.

Enteric Fever.—This disease has been somewhat more prevalent, at no time, however, was it epidemic: 129 cases have occurred during the year, as compared with 44 in 1903, and 55 in 1902. Nearly one-half of these occurred during the last three months of the year. Thirty-three of the cases were imported.

Malarial Fevers.—To show the diminution which has occurred since 1900, the year in which anti-malarial measures were instituted, I give the admissions from this class of endemic diseases to the three hospitals whose returns are given in these annual reports for the last four years :—

Admissions from Malarial Fever.

	1901.	1902.	1903.	1904.
Government Civil Hospital	787	349	346	221
Gaol Hospital	98	63	93	59
Tung Wah Hospital ...	508	404	205	210
Totals	1,393	816	644	490

At all these hospitals the diagnosis of this disease is made by means of the microscope.

The annual number of cases of malarial fever at these hospitals has thus fallen in four years from 1,393 to 490; no clearer proof can be required of the efficacy of these measures.

Beri-beri.—This disease has been much more prevalent, 739 deaths having been reported, as against 397 in 1903. An enquiry into this disease is now being conducted by Dr. Koch and the Government bacteriologist, and it is to be hoped that some light will be thrown upon this malady about whose etiology so so little is really known.

Dengue.—There were only 43 cases admitted to hospital, as against 123 in 1903, and 422 in 1902.

The following table gives the number of cases of infectious disease notified in each month of the year :—

Disease	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Plague	3	4	40	135	194	96	19	9	...	5	5	510	
Small-pox	3	14	24	10	6	3	1	1	..	...	2	64	
Enteric fever	3	19	8	3	6	8	6	10	3	17	34	12	129
Scarlet fever	1	...	...	...	...	...	...	...	...	...	...	1	2
Diphtheria	1	...	...	...	...	1	..	...	2	1	1	...	6
Puerperal fever	...	...	...	...	1	1	1	..	...	...	1	2	6
Cholera...	...	1	...	16	19	5	...	...	...	...	...	...	41

General Sanitary Condition of the Colony.

Marked improvement may be noted as evidenced by the diminution in the death-rate for the past three years as shown by the following figures, by the milder outbreak of plague last year, and by the diminished incidence of malarial fever.

	Death-rate per 1,000. 1902.	1903.	1904.
Chinese	21·93	19·1	17·18
Non-Chinese	19·00	16·6	12·48

The steady enforcement throughout the year of the overcrowding and cubicle sections of the Public Health Ordinance must have had a beneficial effect.

During the past year the Government has resumed at a cost of $200,000 an insanitary block of 38 houses in one of the most overcrowded parts of the city; this lot is bounded on the north by Gough Street, on the east by Aberdeen Street, on the south by Kau U Fong, and on the west by On Wo Lane.

The following have been erected and opened during 1904 :—

(1) A public bath-house at Pound Lane with accommodation for 28 males and 10 females.

(2) A public latrine in the eastern portion of the city; and

(3) Three public latrines in the city.

Vaccinations.

The following vaccinations were performed during the year :—

Government Civil Hospital	639
Victoria Gaol	2,578
Alice Memorial Hospital	277
Tung Wah :—	
Victoria	1,811
Aberdeen	15
Stanley	17
Shaukiwan	46
Kowloon	86
	5,469

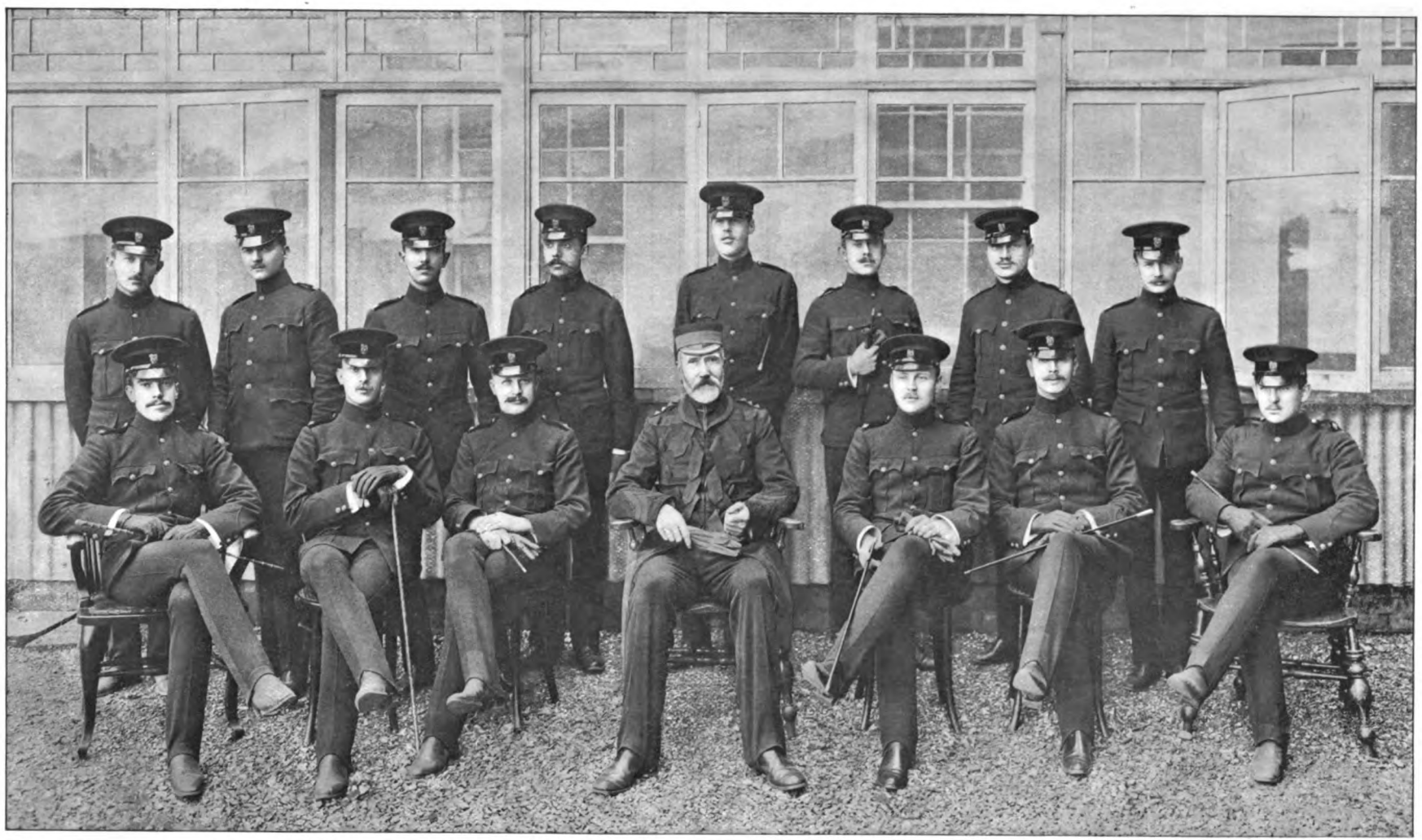
Meteorological Return.

Month	Barometer at M.S.L.	Temperature			Humidity		Cloudiness	Sunshine	Rain	Wind	
		Max.	Mean	Min.	Rel.	Abs.				Dir.	Vel.
	Ins.	Deg.	Deg.	Deg.	P. c.	Ins.	P. c.	Hours	Ins.	Points	Miles per h.
January ...	30·20	64·9	59·5	55·4	72	0·37	49	185·2	0·120	E. by N.	13·8
February ...	30·12	68·1	62·6	58·5	69	0·40	37	207·5	0·200	E.	13·9
March ...	30·00	67·0	63·2	60·3	87	0·51	97	29·7	3·755	E. by N.	14·6
April	29·96	75·2	70·7	67·8	86	0·65	83	112·4	1·905	E.	14·8
May	29·88	80·8	75·6	71·8	83	0·74	73	148·0	7·705	E. by S.	12·8
June	29·72	85·0	79·8	76·0	83	0·84	72	162·1	19·640	S.E. by E.	9·9
July	29·67	85·9	81·1	77 9	82	0·88	76	147·4	7·225	S.S.W.	10·9
August ...	29·70	86·0	80·8	77·2	83	0·87	68	172·6	27·640	E. by S.	13·2
September ...	29·88	85 0	80·2	76·3	81	0·84	66	161 3	9·770	E.	11·5
October ..	30·01	80·1	76·5	73·3	74	0·68	58	191·2	2·005	E. by N.	14·1
November ...	30·15	74 0	68·8	64·6	62	0·45	55	187·3	0·215	E.N.E.	13·1
December ...	30·23	66·1	60·7	55·7	62	0·34	45	201·7	0·230	E.N.E.	10·6

Return of the Statistics of Population for the Year 1904.

	Europeans and Whites, including Portuguese and the Army and Navy	Africans, East Indians and Malays, including Indian Troops	Chinese	Total
Number of Inhabitants in 1904	13,106	5,794	342,306	361,206
,, Births ,, ,,	199	64	942	1,205
,, Deaths ,, ,,	137	99	5,882	6,118
,, Immigrants ,, ,,	...	...	149,195	149,195
,, Emigrants ,, ,,	...	...	76,304	76,304
,, Inhabitants in 1903	12,771	5,810	307,050	325,631
Increase ...	335	...	35,256	35,591
Decrease ...	...	16	...	16

Lieutenants of the Indian Medical Service who recently completed a Course of Instruction in the Royal Victoria Hospital, Netley, and the Royal Army Medical College, London.



Lieutenants :—Falk. Buckley. Boalth. Reaney. (1st Montefiore prize.) Coppinges. MacWalters. W. H. Hamilton. R. K. White.

Lieutenants :—Soltau. O'Neill. (Maclean prize.) A. D. White. (Martin Medal.) COLONEL MACLEOD. A. F. Hamilton. Wilson. (Webb medal and 2nd Montefiore prize.) Cunningham.

RELATIVE MORTALITY IN THE DIFFERENT SEASONS, 1904.

POPULATION: NON-CHINESE, 18,900; CHINESE, 342,306.

Months	Non-Chinese Deaths	Rate per 1,000	Chinese Deaths	Rate per 1,000	Total Deaths	Total Deaths, excluding Plague and Small-pox
January	12		328		340	340
February	17	9·9	315	12·21	332	327
March	18		402		420	405
April	16		451		467	415
May	18	11·8	619	19·06	637	499
June	22		561		583	407
July	30		646		676	571
August	23	15·0	630	20·99	653	630
September	18		521		539	529
October	19		476		495	495
November	22	13·1	483	16·46	505	501
December	21		450		471	466
Total	326		5,882		6,118	5,585

RETURN OF DISEASES AND DEATHS IN 1904 AT THE

Government Civil Hospital, at the Victoria, and at the Tung Wah Hospitals, Hong Kong.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	59	—	59
Anæmia	15	1	15
Anthrax	—	—	—
Beri-beri	812	337	812
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	—	—	—
Cholera	20	15	20
Choleraic Diarrhœa	2	1	2
Debility	211	33	211
Delirium Tremens	—	—	—
Dengue	43	—	43
Diabetes Mellitus	1	—	1
Diabetes Insipidus	1	—	1
Diphtheria	3		3
Dysentery	182	22	182
Enteric Fever	44	12	44
Erysipelas	12	—	12
Febricula	128	—	128
Filariasis	—	—	—
Gonorrhœa	60	—	60
Gout	1	—	1
Hydrophobia	—	—	—
Influenza	—	—	—
Kala-Azar	—	—	—
Leprosy	—	—	—
(*a*) Nodular	7	—	7
(*b*) Anæsthetic	—	—	—
(*c*) Mixed	—	—	—
Malarial Fever—	490	60	490
(*a*) Intermittent—	—	—	—
Quotidian	—	—	—
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	—	—	—
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	2	—	2
Malta Fever	—	—	—
Measles	6	—	6
Mumps	3	—	3
New Growths—			
Non-malignant	13	—	13
Malignant	21	11	21
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	142	64	142
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	1	—	1
Rheumatism	98	—	98
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	4	—	4
Septicæmia	8	7	8
Sleeping Sickness	—	—	—
Sloughing Phagedæna	5	—	5
Small-pox	10	—	10
Syphilis—	—	—	—
(*a*) Primary	98	13	98
(*b*) Secondary	61	—	6
(*c*) Tertiary	—	—	—
(*d*) Congenital	2	—	2
Tetanus	8	8	8
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	19	10	19
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
GENERAL DISEASES—*continued.*			
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	3	—	3
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	144	1	144
Circulatory System—			
(*a*) Valvular Disease of Heart	—	—	—
(*b*) Other Diseases	74	32	74
Digestive System—			
(*a*) Diarrhœa	—	—	—
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	—
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	—	—	—
(*g*) Cirrhosis of Liver	—	—	—
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	475	91	475
Ear	10	—	10
Eye	101	—	101
Generative System—			
Male Organs	93	—	93
Female Organs	19	4	19
Lymphatic System	68	—	68
Nervous System	115	21	115
Nose	—	—	—
Organs of Locomotion	65	—	65
Respiratory System	784	357	784
Skin—	—	—	—
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	—	—	—
(*f*) Other Diseases	166	—	166
Urinary System	68	22	68
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	23	2	23
(*c*) Other Injuries	659	38	659
Parasites—	17	—	17
Ascaris lumbricoides	2	—	2
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	1	1	1
Surgical Operations—			
Amputations, Major	—	—	—
,, Minor	—	—	—
Other Operations	—	—	—
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

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From the *Morning Post*, July 12, 1905.

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HEALTH IN HOT CLIMATES.

Lieutenant-Colonel Giles, late of the Indian Medical Service, has produced "A Popular Treatise on Personal Hygiene in the Hotter Parts of the World." It should be of inestimable value to those who have to spend their lives in climates which differ radically from those in which they were born. The merit of the book lies in its clearness and simplicity. Taking it as a guide, an Englishman might provide himself with an ample medicine chest, select the best site for his dwelling-place, and have it erected on the soundest plans. He might thereafter, if far away from medical advice, guard against dangers to health, and deal with the earlier stages of such ills as may arise by simply using his commonsense under the precise and lucid directions given in various chapters of this book. In the opinion of the author, while it is hopeless to expect that anything in the way of actual colonisation can succeed in the climates with which he deals "with due care and attention to sanitary laws, as modified by the altered conditions, there is no reason why the rates of sickness and mortality should be much more formidable than elsewhere." Knowledge has increased enormously, and it is the application of it in daily life that is now most necessary. A very valuable feature of the book is that in which carefully-selected information is given about climatic conditions in various tropical countries. Colonel Giles expresses the surprise he experienced when, in collecting material for this section, he found himself "engaged in the preparation of what is really a pioneer work on the subject in the English language. But the slight efforts made to provide such data in a convenient form is suggestive of that carelessness which has led to the sacrifice of many lives. Much of the volume deals with India, where, as the author points out, the non-medical European has often to take measures for the protection of the indigenous community in cases of plague. Advice to all such is given along with good counsel as to the best ways of inducing the natives to accept sanitary precautions. Such a book as this should be regarded as a necessary part of the outfit for everyone going to reside in a tropical climate, and a careful study of its contents will be the best preparation for the dangers to health that may be encountered.

* Climate and Health in Hot Countries. By Lieutenant-Colonel Giles, M.B., F.R.C.S. London: John Bale, Sons, and Danielsson (Limited). 7s. 6d.

MEMORIAL TO LORD CHICHESTER.

TO THE EDITOR OF THE MORNING POST.

SIR,—All those who honoured and loved Francis Pelham

.ature were child vince Out ter the we. tres tion tre: tr re [l, w sc Th wh no: bu: we but had to r cred De: the an: fea (Ch , m in; ch use

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Treatment.—Purgatives and opiates.

This epidemic has been no respecter of persons, young, old, male, female, rich and poor, all being alike attacked, and its distribution has not been confined to any single area.

A coincidence which may be worth mentioning is the fact that the three towns in which cerebro-spinal meningitis has occurred only use well-water for drinking; one native has just told me that he remembers an epidemic similar to this one occurring at Kukua some thirty years ago.

Up to the present I have had no opportunities of making any *post-mortem* examinations, but hope soon to do so. I am also carrying out some microscopic examinations. I may here state that, having seen a good number of cases of cerebro-spinal meningitis in America, I am pretty confident that my diagnosis of the present epidemic is a correct one.

AN OBSTINATE CASE OF OBSTRUCTION OF THE BOWEL—TREATMENT—RECOVERY.

By Major G. H. Fink, I.M.S., L.R.C.S., L.S.A.

Late Civil Surgeon, Bijnor District, N.W.P., and Oudh, and Prince of Wales's Hospital, Benares.

The various causes of bowel obstruction are too well known to the physician and surgeon to need any description of an elaborate kind, but that it is of great value to be able to rapidly and correctly diagnose your patient's condition, and to adopt surgical or medical measures for the relief of the wretched sufferer, every practical surgeon or physician must in the course of his experience have come to fully recognise the deep importance of. Delay in diagnosis of your patient's state is not only dangerous, but it shakes the confidence of the patient's friends and others, although in bowel obstruction it is always necessary to wait for some urgent symptom to justify surgical interference even in these days of antiseptic abdominal surgery.

The surgeon who has fully considered his case, and has given his patient all the opportunities which medicinal treatment can accomplish, must make up his mind, however, to operate ere the sufferer has reached that lowered stage when surgical interference would give him very little hope of recovery.

There is no complaint which the human body is subject to which gives rise to such intense suffering and anxiety as is depicted in the physiognomy of the poor sufferer, as powerful muscular contractions of the voluntary or involuntary muscular tissues.

We see it exemplified in cases of tetanus and hydrophobia, cholera, colic and bowel obstruction, death being welcome to continuance of intense agony.

I was called to see a patient one morning during my rounds by a police inspector, who stated that the poor sufferer had been in agonies for fifteen hours at a stretch—that the hospital assistant's and assistant surgeon's treatment had been tried without avail. On arriving at his bedside, the following was the history of the case:—

General History.—The patient was a tall, thin, spare individual, about fifty years of age, had always had a fair measure of health, his occupation being that of a cook.

Family History.—Nothing noteworthy.

Past State of Health.—Fair, except that he had had occasionally attacks of colicky pain, which were soon relieved with a purgative.

Present Illness.—Came on suddenly after a meal of *kitcherry*.

A dose of castor oil was administered by the master, by soon rejected by patient.

The hospital assistant and assistant surgeon had given enemas of castor oil, but without any good effect, and the patient was now suffering for fifteen hours from severe pain which was exhausting him rapidly, requiring a careful examination of his condition.

Present State.—A thin, spare and tall individual, decubitus dorsal, with an expression of great pain and anxiety on his countenance, rather a woe-begone appearance, with limbs outstretched.

Skin.—Cold, and clammy on surface.

Pulse.—Feeble, quick, regular, and becoming somewhat imperceptible.

Tongue.—Dirty yellow-brown on dorsum, red at tip, small, and very dry.

Temperature.—Subnormal.

Physical Examination.—Inspection: Muscular tension of abdominal muscles.

Palpation.—Hardness of a board over surface of abdomen generally, tenderness in the right lumbar and iliac regions, with hardness and resistance on pressure.

Percussion.—Dulness of abdomen generally. On lifting the thighs and flexing them on abdomen, he complained of pain on movement; but he felt relief in the position assumed, so this position was maintained to keep up relief.

The bowels were constipated, no desire to vomit, although a little nausea was present. No food of any kind was desired nor taken since the attack: thirst was great.

Diagnosis.—Obstruction of the bowel. Nature—doubtful, but in favour of scybalous mass impacted in the intestine.

Prognosis.—Somewhat unfavourable, owing to rapid exhaustion.

Treatment.—Rest in bed with the thighs flexed on abdomen and maintained in this position by pillows.

Strong beef tea with a little rum to be given every quarter of an hour in small quantities to maintain the strength and overcome rapid exhaustion.

Solid opium pill gr. i. to relieve pain and give the bowels rest, and to cause sleep to overcome exhaustion and pain after fifteen hours of unrest and agony.

Hot fomentations and turpentine over belly every hour, with massage in downward direction towards the pelvic outlet, with a little mustard oil to be rubbed over the abdomen with friction.

Result.—Relief, but not permanent. Patient seemed better in every way, so I ordered the following enema:—

℞ Castor oil	ʒ iss.
Turpentine	m. 40.
Warm water	O iss.

Mix—Sg. inject gently into the bowel *per rectum*.

Result.—One small scybala about the size of goat's dung and very hard. This indicated that there was a scybalous mass present; and if it could not be brought away by inducing action of the bowels, it would have to be broken down by mechanical means to remove the obstruction early, since perityphlitis or peritonitis might set in from the severe pressure exercised by such a hard mass.

I next ordered another enema, with no result this time.

I then injected glycerine ʒiv. into the bowel straight away, and in less than half an hour a huge motion occurred with scybalous masses in it. The injection of glycerine was repeated in two hours with a like result. Gentle massage over the belly with mustard oil and hot fomentations with turpentine were continued, and the patient made an excellent recovery, and is now happy.

Remarks.—It is worthy of note in this case that, although very prompt measures were required to relieve the patient from his agonising pain, it was also necessary to husband his strength, which had been so much lowered through the long continuance of his trouble, which had lasted fifteen hours ere I arrived at his bedside, since, whatever might be the cause of the obstruction, an operation under chloroform would have eventually been the only means of saving the patient's life, and the question would arise, "Has he got the strength to endure a severe operation or mechanical breaking down of the scybalous mass in the bowel?"

Nausea was present, be it remembered, and the case looked as if it were going on towards actual vomiting, if relief did not come very soon, and then operative interference would surely be called for if the patient could bear the operation, which might have been a protracted one or otherwise, depending, of course, on the nature of the obstruction.

The passage of the scybala was some reason for supposing it to be one of fæcal impaction; but the triumph was not due to enemas of castor oil and turpentine, but to glycerine injections in large doses of ʒiv. twice *per rectum;* the results were astonishingly rapid and effectual.

I feel also that the administration of solid opium in pills, together with the careful nourishment and small doses of stimulant at frequent intervals, gave strength to the patient's whole system, and enabled the bowel after rest to evacuate its contents, by the restoration of the nervous system which controls bowel action. This was only a common-sense method of reasoning out the probabilities of the case.

I feel that perhaps I would have acted more wisely if I had administered morphia instead of solid opium, for reasons which need no explanation; but as a rule natives indulge in opium as a prophylactic against various diseases; and had I failed in my wished-for effect of the opium pill, I would certainly have given morphia, hypodermically, a fair trial.

Now as to the question of massage and fomentation with turpentine and friction with mustard oil, perhaps it was somewhat heroic in the face of the conditions which were present in the bowel, with pain and tenderness; but had peritonitis actually set in, the patient's natural decubitus would have been very different to what it was, and the knees would have been instinctively drawn up to relieve pressure of the abdominal muscles. Moreover, there would surely have been a high temperature and a quick, wiry pulse. Massage doubtless helped to a great degree in supporting the peristaltic action of the bowels in the normal direction and driving the scybalous mass to the termination of the large intestine.

The *modus operandi* of the large doses of glycerine, so rapidly effectual in its results, might be explained in the usual manner, viz., abstracting fluid rapidly from the bowels and also from the fæcal mass itself which it perhaps percolates through and softens and breaks down in the process of abstracting water and softening, and so its triumph in this particular case.

This case will also illustrate the fact that you must treat your patient and not the disease only. It will also illustrate to the physician and surgeon the necessity of trying the simpler methods first before hastening into the graver ones, and it will also impress one with the fact that one large glycerine enema is not surrounded with the dangers of aperients and enemas which are so much deprecated in works by standard authors.

French Health Resorts—Annual Visit of Medical Men and Students—Voyages d'Etudes Médicales.—This year's visit will comprise the most important stations in the Western Pyrenees. It will start from Luchon on Friday, September 1st, and terminate at Arcachon on Thursday, September 14th. The price to be paid, which includes everything between these two places, is £12. There are no extras of any kind. The travelling is by first-class special train, and the accommodation is the best which each place has to offer. In order to reach Luchon, a ticket (first and second class) at half-price will be issued from any selected point on French territory, and a similar reduction will be made on the ticket from Arcachon to the point of departure from French territory. The district to be visited is remarkable for its extreme beauty and interest, and the stations for their therapeutic value. Among them are such well-known resorts as Luchon, Cauterets, Saint-Sauveur, Eaux Bonnes, Pau, Biarritz, Dax and Arcachon, together with many of minor importance, The particular features of each place are briefly described by Dr. Landouzy, Professor of Clinical Medicine at the University of Paris. Medical men (who may be accompanied by their wives), medical women and students in medicine, are eligible to take part in the trip. Names must be sent in so as to reach Paris on or before August 15th. They should be accompanied by the subscription (£12), which may be in the form of an ordinary English cheque payable to Dr. Carron de la Carriere, 2, Rue Lincoln, Paris; or to Dr. Leonard Williams, 8, York Street, Portman Square, W., from either of whom any further information may be obtained.

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THE

Journal of Tropical Medicine

JULY 15, 1905.

THE END OF THE NETLEY SCHOOL.

THE photograph which we issue with the current number of the Journal possesses an interest almost historic in its import, for, owing to the abolition of the Netley School, it represents the last of the thousands (3,000 in all) of medical officers who have received their special training there.

Since April 1st, 1863, all the medical officers of the Army have studied there, and from 1871 the medical officers of the Navy, until the school at Haslar was established in 1880, also went to Netley for their training. Not only may it be allowed all those who have known the Netley School, its traditions and associations, to lament the permanent closing of the institution, but when we consider the excellent work accomplished by the men who have taught and who have studied there, the fact that Netley as an educative centre will soon become merely a memory and tradition, however brilliant its successor may be, cannot be contemplated without a tinge of regret by the medical profession generally.

The Netley School will be best remembered by the fact that it gave to the world a new science, Preventive Medicine. Until Parkes, the Professor of Preventive Medicine in the Netley School, published his great work, our knowledge of hygiene was merely empiric, a collection of saws and wise sayings mostly by unwise folks. From Biblical times there had been practically nothing done to systematically advance hygiene, until Parkes established a basis on which to found hygiene and preventive medicine as a science. Had Netley done nothing more than to give us Parkes and his teaching, the reasons for its existence were amply justified.

Yet Netley originated another branch of medicine which has come markedly into prominence lately. Tropical medicine has formed a distinct part of the education of medical men joining the military services ever since the Netley School was founded, and was the only school at which the subject was taught in the country until a few years ago, when the London and Liverpool Schools came into existence. The men who taught in the School have left honoured names behind them. In addition to preventive medicine taught by Parkes, there were at the Netley School chairs of military medicine, military surgery and pathology, occupied and adorned respectively by Longmore, MacLean and Aitken. All these names were household words in the sphere of medicine a decade or two ago, and to military medical men each name serves to recall memories of revered teachers and of capable and brilliant specialists in their particular province.

In the centre of the group represented in the photograph will be seen the well-known features and figure of Colonel Kenneth Macleod, the last, but by no means the least, amongst the staff and teachers of the great School.

Since 1897 Colonel Macleod has occupied the Chair of Clinical and Military Medicine. He brought a ripe experience of well-nigh thirty years' earnest work in India to the Netley chair,

and with the closure of the School Colonel Macleod's work as a teacher ceases. No name stands higher in the modern annals of medicine and surgery than Colonel MacLeod's, and we hope in an early number to give a full account of the professional work he has accomplished in the service of his country.

While lamenting the disappearance of the Netley School, we hope and believe that the Royal Army Medical College in London will continue to fulfil its duty to and by the country, and will aspire to even greater excellence than that attained by the great School it has superseded.

LEISHMAN BODY FOUND IN CHINA.

Forwarded for publication by Dr. T. S. Kebr.

The readers of the Journal of Tropical Medicine will be interested to learn that the Leishman body has been found in a case of splenomegaly in Hankow, Central China.

Enlargement of the spleen, not associated with malarial parasites, is believed to be common in this district. Dr. Airde made splenic puncture in one of these cases and found in films prepared from blood so obtained the characteristic bodies.

The preparation was submitted by Dr. Thompson, of Hankow, to Sir Patrick Manson, who says there can be no question of the correctness of Dr. Airde's diagnosis.

THE MEDICAL PHASES OF IMMIGRATION LEGISLATION.

By V. G. Heiser, M.D.

In a paper on this subject (*Medical Record*, June 17th, 1905), Heiser, Chief Quarantine Officer for the Philippines, gives a list of some of the more important diseases and ailments which would induce the medical officer, from hygienic and economic reasons, to reject an immigrant. Trachoma is, of all complaints, that which causes the greatest number of rejections. Then comes fevers, leprosy, and syphilis in its active stages. Tubercular cases, when the tubercle bacillus is found in the sputum, should be excluded. All persons mentally afflicted are mere burdens to the State. Persons suffering from valvular heart disease, hernia, chronic rheumatism, malignant disease, deformities, senility, debility, defective eyesight irremediable by glasses, and of poor physique generally, are useless as immigrants in a new country where life is likely to prove strenuous.

SECOND CONFERENCE OF THE CHINA MEDICAL MISSIONARY ASSOCIATION.

Held at Shanghai, February 5 to 8, 1905.

Officers of the Association.

President, Dugald Christie, F.R.C.P., L.R.C.S. (Moukden); *Vice-President*, J. M. Swan, M.D. (Canton); *Secretary and Treasurer*, R. T. Booth, M.B., B.Ch. (Hankow); *Editors of Journal*, C. S. F. Lincoln, M.D., and W. H. Jefferys, M.D. (Shanghai). Dr. J. B. Neal was elected Chairman for the Conference.

Some forty delegates were present at the conference. The education and training of the Chinese in medicine was the chief subject dealt with at the several meetings of the sections.

It was resolved that the Journal of the Association, *The China Medical Missonary Journal*, be issued six times yearly instead of four times as heretofore.

The following reports of committees were presented:—

(1) A tract in English upon the treatment of the opium habit, presented by Dr. Boone.

(2) Information on the Chinese "Materia Medica," presented by Dr. Park.

(3) An appeal to the Home Board urging the appointment of two medical missionaries to every large centre, presented by Dr. Woodhull. Dr. Cousland presented the report of the Medical Nomenclature Committee.

The following papers were read during the conference:—

"The China Medical Missionary Association," by Dr. Neal.

"Tuberculosis of Joints," by Dr. J. H. McCartney.

"Opium Smoking in China," by Dr. Park.

"Abscesses and Ulcers," by Dr. E. I. Osgood.

"Diphtheria," by Dr. Wilkinson.

"Operative Methods for Urinary Calculi," by Dr. J. M. Swan.

"Liver Abscess," by Dr. Plummer.

"Malta Fever in China," by Dr. Boone.

"Medical Work among Children," by Dr. Lincoln.

"Artificial Respiration in Opium Poisoning," by Dr. Evans.

"Sanitary Work of the Japanese in Formosa, and their Plan of Campaign against Plague," by Dr. Maxwell.

"A Few Remarks on Obstetrical Cases," by Dr. Reifsnyder.

"Hernia and Fæcal Fistula," by Dr. Hearn.

"Self-supporting Medical Work," by Dr. Ida Kahn.

"Successful Surgery," by Dr. Meadow.

The next Conference will be held in 1907.

Review.

LE BERI-BERI. By Dr. H. VIVIAN Dangerfield. Paris: A. Maloine. 1905.

This book extends to 450 pages, and deals with the etiology, pathology, clinical aspects and treatment of beri-beri. Maloine is inclined to attribute the disease to a coccus which he terms the *Micrococcus beri-bericus*.

The author gathered his information from a study of 151 cases of beri-beri which has come under his observation during the past seven years.

Correspondence.

MERCURIAL POISONING CASE, NORTH-WEST RHODESIA.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

A TRADER, W. H., aged about 45, provided himself at Benguela with some aperient powders, and the directions given were to take one at night if necessary, and take no salty food afterwards, and if it did not act well to repeat the dose the following night. If he had been able to read Portuguese he would have seen that each powder contained one gramme of calomel. When trading inland, near the source of the Zambesi, on January 4th, about 9 p.m., not feeling well, he took one of his powders. His mouth felt a little sore next morning, but the bowels reacted only slightly, so he repeated the dose, taking his second gramme of calomel on the evening of the 5th, twenty-four hours after the first dose.

He was awakened in the night with a burning pain, and his tongue became swollen and white, and saliva flowed continuously from his mouth.

Two days afterwards his gums began to bleed, and the blood clotted in his mouth, and the fœtor became almost unbearable. His face began to swell and the swelling increased until he could hardly open his eyes. The blood continued to ooze out from his gums for fifteen days. A day or two after he arrived at one of our mission stations.

I saw him on January 31st. He had then regained sufficient strength to walk, but he was excessively anæmic and the face swollen, gums ulcerated, and salivation still continuous. A few weeks afterwards he was sufficiently recovered to return to his trading station. He apparently has had no other symptoms.

WALTER FISHER, M.R.C.S.,
Kazmba, North-west Rhodesia,
April 7th, 1905.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—My attention has been called to a paragraph in the issue of February 1st of the JOURNAL OF TROPICAL MEDICINE, on page 44, where certain observations with regard to ankylostomiasis in Porto Rico are credited to Major Seaman. I am sure that Dr. Seaman, who is now in the Orient, would be most unwilling to take credit for the labours of others, and he has had no opportunity of doing any original work with reference to the distribution of ankylostoma in that island.

The paragraph probably refers to a report made by him for a New York daily paper of the very creditable and extensive work which has been performed in the last two or three years by Captain Baily K. Ashford, Assistant Surgeon United States Army, and Passed Assistant Surgeon W. W. King, of the United States Public Health and Marine Hospital Service. It gives me pleasure to send you by mail a copy of a recent report made by these gentlemen to the Governor of Porto Rico, entitled "Anæmia in Porto Rico."

Very respectfully,
R. M. O'REILLY,
War Department, *Surgeon-General, U.S. Army.*
Office of the Surgeon-General, Washington.
June 29th, 1905.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

DEAR SIR,—Having called attention, in 1903, to the favourable effects of "Cyllin" in "Mediterranean fever," I should like to state that since then others in private practice have likewise obtained good results from its use.

It has also been tried in one of the naval hospitals. In one case only was the result *nil*. In the others the duration of the fever, as compared with patients not taking cyllin, was reduced by nearly one-half. A full report will doubtless be published later.

Yours,
London, WILLIAM HARTIGAN, M.D., D.P.H.
July 14th, 1905.

Notes and News.

SCHAUDINN'S announcement that the *Spirochæte pallida* is the germ of syphilis seems to be gaining credit. Metchnikoff, Fraenkel and Lehman and many others support the statement that the *S. pallida* is met with in the lesions of acquired and inherited syphilis and nowhere else. The *S. pallida* has not yet been cultivated.

THE estimated cost of the scientific investigation concerning plague in India for the current year is £5,000.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Government Laboratories of Manila Report," No. 20, October, 1904.

(1) Does Latent or Dormant Plague Exist where the Disease is Endemic?

M. Herzog and C. B. Hare answer this question by stating that out of 245 blood examinations of persons of whom a large percentage had certainly been greatly exposed to plague infection, in no single instance was any evidence found of the existence of plague bacilli in the blood.

(2) Report on Pinto (Paño Blanco).

P. G. Woolley states that cases of Pinto exist in the Philippine Islands. He found a coarse meshwork of branching segmented hyphæ amongst the epithelial cells. The mycelium was very fine and beaded or granular. The spores were darker in colour than the

rest of the organism and less refractile. The clear white colour of the irregular patches, the presence of sensation and itching, together with the microscopic findings, are sufficient to diagnose the condition as that of true Pinto.

(3) Frambœsia; its Occurrence in Natives of the Philippine Islands.

P. G. Woolley considers that the cases of so-called lepra met with in the Philippines are probably frambœsial.

"Deutsche Medizinische Wochenschrift," June 8, 1905.

Investigations of the Coast Fever of Cattle, and Horse Sickness in Africa.

Kleine, a member of R. Koch's staff engaged in the study of cattle pests in various parts of Africa, states that the rinderpest in cattle which has been hitherto regarded as a variety of Texas fever is a distinct disease. The hæmoglobinuria and the presence of a pear-shaped parasite in the red corpuscles are due to a secondary infection in the course of a disease which Koch has termed African coast fever. In the red cells organisms are met with of either rod- or ring-shaped outline. The Texas fever parasite is present in these animals, but it only becomes virulent when the animal's powers of resistance are lowered by the illness caused by the first illness due to the coast fever parasite. All the cattle kept in infected regions which recover become immune, but the disease is fatal in from 85 to 90 per cent. of the cases. To exterminate the tick which serves as the intermediary host seems impossible, and the most feasible prophylaxis seems to be immunisation with the blood of infected animals.

Philippines.

[Extracts from the Vital Statistics of the Philippines Census of 1903. Forwarded by Isaac W. Brewer, M.D.]

The Philippine archipelago is situated entirely within the Tropics. In latitude it extends from N. 4° 40′ to N. 21° 10′, and in longtitude from E. 116° 40′ to E. 126° 34′. There are known 3,114 islands, comprising a land area of 115,026 square miles.

The inhabitants are largely Malays, that have been more or less crossed with the Chinese and the Negretos (the oldest known inhabitants of the islands). There are said to be 23,000 of the latter living in the more inaccessible parts of the mountains.

According to the census enumeration there were on March 2nd, 1903, 7,635,426 people on the islands; 6,987,688 are classed as civilised or partly civilised. There were 8,135 Americans, 6,136 other whites, and 41,035 Chinese.

The density of the population for the entire archipelago was 67 per square mile. The most densely populated province, Ilocus Sur, had 398 persons to each square mile; 65 per cent. of the Christian population (civilised natives) live on the sea coast.

The average birth-rate computed from records for the year 1876 and 1885 to 1898 was 47·9 per thousand. The average death-rate for the same period was 39·7 per thousand, but omitting the cholera years 1879, 1889 and 1890 it was 31·7.

Table of distribution of deaths from the following causes in the Philippine Islands, expressed in percentages of the total number of deaths during 1902 and 1903:—

Cause of Death.	Per cent. 1902	Per cent. 1903
Malarial fever	26·8	28·3
Tuberculosis...	6·6	7.7
Small-pox	3·4	6.2
Bubonic plague	?	0·1
Cholera	31·1	19·0
Diarrhœal diseases	3·2	7·1
Beri-beri	1·3	1·5

Cholera appeared in Manila in March, 1902, and spread rapidly over the islands, causing 31·1 per cent. of the deaths that year, and 19 per cent. of the deaths in 1903. The total number of deaths from this disease recorded in the census reports was 200,348. During the epidemic of 1879 there were about 400,000 deaths from cholera, and in 1889-1890 the mortality from the disease was about 260,000.

The following are the statistics relative to the defective classes amongst the civilised population:—

	Total.	Brown.	Mixed.	Yellow.	White.	Black.	Total per 100,000.
Insane ...	15,372	15,328	16	15	9	4	220
Blind ...	15,811	15,772	19	13	7	0	226
Deaf... ...	23,227	23,176	16	20	12	3	332
Deaf and dumb	5,910	5,907	3	0	0	0	85

The cases of insanity developed during 1902 amongst the soldiers serving in the Philippine Islands amounted to 114.

"Indian Public Health," June, 1905.

(1) How Plague Originates in Cities in India.

Captain E. F. Gordon Tucker, I.M.S., in an article entitled "The Management of a Plague Epidemic and the Principles on which it should be Based," gives an interesting account of how plague seems to originate in a city independently from infection from without.

A family comes from an infected area in good health, and settles down to live in the house and with the family of a friend A. As the family has come from an epidemic in another town in which the pestilence has passed its maximum, any case occurring in the infected family in its new quarters is not likely to be of the fulminant type. One member, X., develops symptoms of fever, with vomiting and diarrhœa, and has in a day or two a bubo which suppurates under native remedies, bursts, discharges, and finally heals up. The convalescent departs with his family to his former place, and nothing more is heard of him. When A.'s house has become infected a friend B. comes from a distant quarter of the town, sits for some hours in the infected house, knowing nothing of its condition, and departs for his own with the virus in his system. As he is an early indigenous case his illness is *likely* to be fulminant and atypical. Next day he develops high fever and delirium and dies in a few hours. This is a clear case of death from "fever," and any one suggesting it to be one of plague is considered a nuisance and a fool. C. comes to the house and sits by the corpse, and finally attends the funeral. Some days afterwards C. develops high fever and a severe cough. He coughs up with difficulty a considerable amount of expectoration, which his relatives wipe away from his mouth with his clothes. On the third day he dies, and has evidently succumbed to "pneumonia." D. lives in a house built back-to-back with that of B.,

but in a totally different street. He did not know B., even by sight, and probably does not know that B. is dead. Six days or so after the burial of B., D. finds that one of his children is ill with fever, and a tender lump in the neck; the same night D.'s wife dies, after vomiting incessantly for an hour.

Ten day's after C.'s burial, some people living in a house lower down the road get ill; the neighbours hear a baby crying and, going in, find a woman with high fever and a large bubo in one groin, and almost insensible, and the husband lying dead, with his face in a pool of blood.

So that the surroundings of B. and C. have become infected, the stage of *local place infection* has started, and all this is due to X., whose existence no one knows of, and through the intermediaries B. and C. whom no one suspects to have died of plague, that is to say, that the stage of *sporadic atypical cases* has been missed.

(2) The Commissioner of Plague, Rangoon, circulates the following precautions against plague: (*a*) Do not sleep on the bare ground at night, but on a bed, or charpoy, or box. (*b*) Do not touch a dead rat with the hands, or eat grain in which dead rats have been found. (*c*) Throw outside the dwelling all waste which rats will eat or on which flies will settle. (*d*) Kill all the rats and mice in your house. (*e*) Avoid the breath and do not touch the face of a person dying or dead from plague. (*f*) Do not shut up sleeping rooms at night, but allow plenty of fresh air to come in. (*g*) Wash all clothing and bedding and dry them in sun every week. (*h*) Do not believe the lies which are circulated by ignorant people, saying that patients are given medicine and then die quickly. No patient is sent to either of the plague hospitals without the order of a qualified doctor. (*i*) Patients may be kept in their own houses, if there is an empty room in which to nurse them. (*k*) A lady doctor attends purdah nashin women.

Standard Chemical Disinfectants. By Wolf Defries, B.A.

Mr. Defries has written a valuable pamphlet describing a method of supplying disinfectants, under which their specific disinfectant values may be defined and compared in relation to their price. In 1896, Mr. C. G. Moor suggested examining some standard disinfectant as a control on the investigation of any new substance. In 1903, Dr. Rideal and Mr. Ainslie Walker suggested that the ratio of the strengths in which a disinfectant would sterilise a given organism, to that of the strength of carbolic acid which would effect the same sterilisation, could with advantage be adopted as a practical measure of the efficiency of a disinfectant. This plan of standardisation has been adopted and constitutes, at present, the method by which disinfectants are controlled or assayed. The value of a disinfectant is really its germicidal efficiency, and on that basis alone is it expedient to determine its practical utility.

Of disinfectants recently introduced, cyllin, a preparation introduced by Jeyes Sanitary Compound Company, holds the most prominent place. Cyllin remains permanently homogenous, and has a bactericidal efficiency of at least eleven times that of pure carbolic acid. Fraenkel states that "the disinfectant action of cyllin excels very considerably that of all other chemical substances with which it is compared." Klein tested the power of cyllin on the tubercle bacillus, and ascertained that it was the best practicable method of destroying such tubercular bacilli as might be found on the floor of public-houses, railway carriages, and other public places. Professors Simpson and Hewlett found cyllin in its effect on the plague bacillus to be thirty-four times stronger than carbolic acid.

Jeyes Company have prepared a liquid cyllin soap disinfectant, a hard and soft soap, with 10 and 5 per cent. cyllin respectively, and a triple-milled soap for surgical purposes, prepared also with 10 per cent. cyllin. As a disinfectant for sewers and drains and for road watering, cyllin is at once cheap and effective.

Medical preparations of cyllin consist of palatinoids (1 and 3 minims) and an emulsified cyllin disinfectant.

For the disinfection of the skin, after scarlet fever, &c., a preparation termed lano-cyllin is handy. A cyllin inhalant, concerning which Dr. Klein has reported favourably as to its potency, is supplied for use in pulmonary disease.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Panama.

YELLOW FEVER.

During the week ending June 12th, 4 fresh cases of yellow fever occurred at Colon and Panama. Deaths from the disease: Colon, 4; Panama, 2.

Sei-I-Kwai, vol. xxiv., No. 1.

An endemic disease in Japan, due to a special parasite, has been discovered and described by Katsurada. The eggs of a trematode have been found in the liver and stools. Although undescribed and unnoticed previously, Katsurada finds that in the district of which he writes the disease has been known for a long time, and every year from 1899 to 1903 between 30 and 54 cases occurred. The mortality was small, the deaths three to five yearly, but the persons attacked were rendered feeble and incapable of work. Children are frequently attacked. Diarrhœa ushers in the complaint; anæmia and ascites supervene. The abdomen assumes a characteristic shape, being flat or hollow below the umbilicus, but distended above. The distension obtains even when the liver and spleen are not markedly enlarged. The parent female parasite and some ova have been found in the branches of the portal vein. Katsurada believes that there is a distinct connection between working in the wet rice-fields and the disease. When wading in the rice-

fields it is found that the skin becomes covered by an eruption which itches severely, and the parasite is presumed to enter by the skin thus irritated. In districts where artesian well-water is used, and where wading in the bubble-covered water of the ricefields is prevented, the disease becomes less frequent.

Plague.

India.—During the week ending June 10th, the deaths numbered 7,486, of which 5,086 occurred in the Punjab.

South Africa.—During the weeks ending June 10th and 17th, fresh cases numbered 3 and 1 (*East London*, 3; *King William's Town*, 1); deaths, 2 and 1.

Mauritius.—During the weeks ending June 23rd, 29th, and July 6th: Fresh cases, 3, 2, 1; deaths, 2, 2, and 1.

Hong Kong.—During the weeks ending June 24th and July 1st and 8th: fresh cases, 16, 25, and 21.

Australia.—During the weeks ending May 27th and June 3rd: fresh cases, 0 and 2 (1 at Ipswich and 1 at Brisbane during the latter week.)

LEPROSY.—Currasquilla, of Bogota, considers that leprosy is not contagious, but that it is infectious and that the infection is conveyed by vermin. Cleanliness of body and habitation and protection against vermin is the proper prophylaxis.

COLONIAL CIVIL SERVICE.

MR. J. E. GREEN, B.A., LL.B., who was recently appointed Solicitor-General of Southern Nigeria, has assumed the duties of his office, and is officiating as Attorney-General, and Mr. R. T. Orpen, the Police Magistrate, is acting as a Puisne Judge.

The Hon. C. Riby Williams, C.M.G., Treasurer of the Gold Coast Colony, who has been acting as Colonial Secretary for some time past, has arrived in England on leave.

Mr. E. E. Colman, who has been acting as Fourth Magistrate at Singapore, has been appointed Third Magistrate in place of Mr. O. B. Robinson, who has been transferred to the Post Office Department.

Mr. Howell Pickwoad, of the Treasury and Customs Department of British Honduras, has been selected for the office of Assistant Treasurer of the British East Africa Protectorate with headquarters at Mombasa.

Mr. Walter D. Bingle, Chief Clerk in the Home Department of the Commonwealth of Australia, has been selected for the office of Chief Electoral Officer for the federated States.

Chief Justice H. G. Kelly, of Southern Nigeria, has arrived in England on leave.

Mr. James Van Langenberg takes over the duties of Solicitor-General of Ceylon in place of Mr. Ramanathan, K.C., C.M.G., who goes upon twelve months' leave prior to retiring from the public service. On his return to the Colony Mr. Ramanathan will devote his attention to the higher education of the Cingalese.

Mr. Cyril C. Pyke, District Officer of Labuk and Sugut, British North Borneo, has resigned his appointment in the public service of that Colony.

Mr. G. C. Woolley takes over the office of District Officer of Jesselton, British North Borneo.

Mr. Rudolph D. Anstead, B.A., has assumed the duties of Agricultural Superintendent in Grenada, West Indies.

Mr. C. H. Hunter, I.S.O., Chief Assistant Colonial Secretary, of the Gold Coast Colony, is acting as Colonial Secretary, and Mr. L. W. Bristowe as Chief Assistant Colonial Secretary.

Mr. W. C. F. Robertson, Director of Education, Gold Coast Colony, becomes Acting Secretary for Native Affairs during the absence on leave of Mr. H. M. Hull, C.M.G.

Mr. L. H. J. Tinney has been confirmed in the office of Deputy Harbour Master and Sanitary Inspector of the Port of Georgetown, British Guiana.

EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Medicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate, Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular. West Africa.

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3.—To ensure accuracy in printing it is specially requested that all communications should be written clearly.

4.—Authors desiring reprints of their communications to the JOURNAL OF TROPICAL MEDICINE should communicate with the Publishers.

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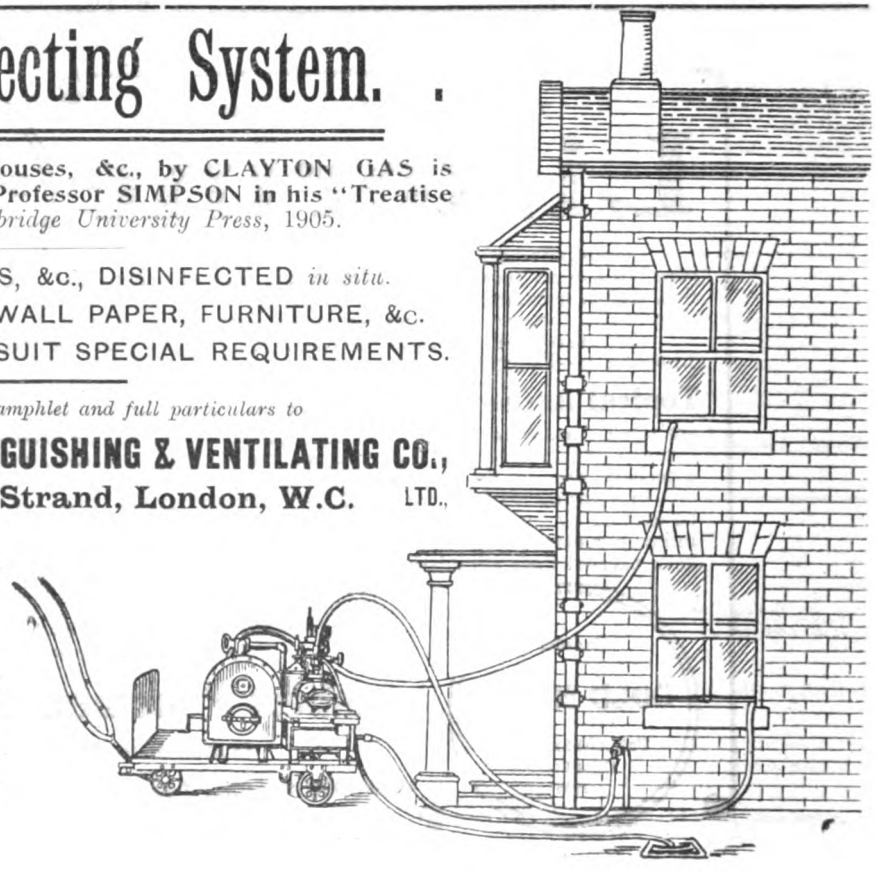
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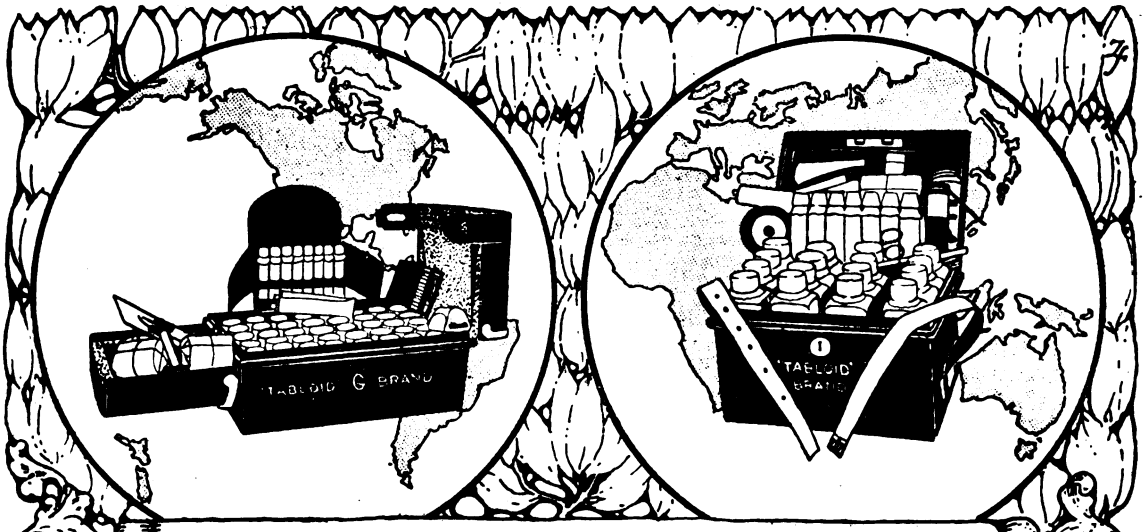
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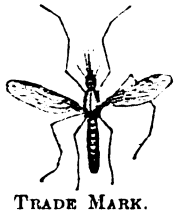
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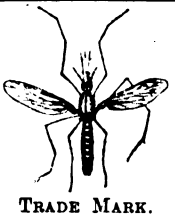


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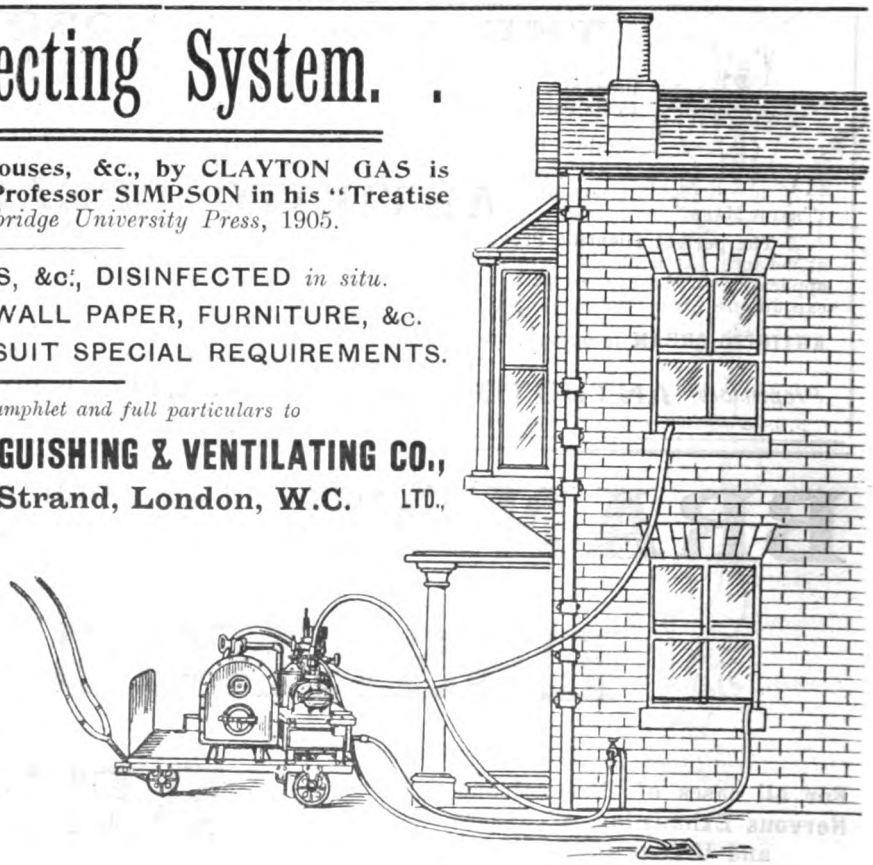
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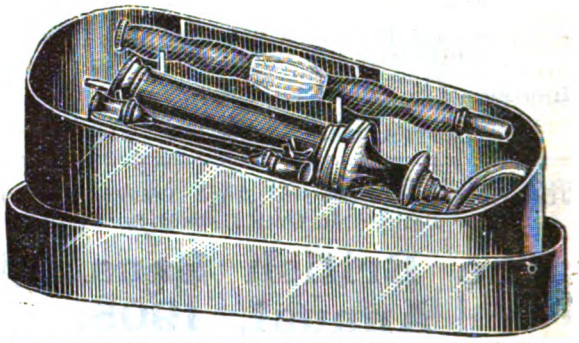
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Original Communications.

SPIRILLOSIS IN PORTUGUESE WEST AFRICA.

By A. YALE MASSEY, B.A., M.D., C.M.
Ranger[illegible]

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SUGGESTIONS.

(1) That the term spirillum fever be used for the tropical cases, instead of relapsing fever, until the (?) various spirilloses are differentiated.

(2) That careful clinical notes be taken of each case where spirilla are found in the blood.

(3) [illegible] ing insects of the locality be

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G OF LIVER ABSCESS: EARLY PUNCTURES.

.D.(Dub.), D.T.M.H.(Cantab.), &c.
l, Parit Buntar, Krian, Federated Malay States.

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[1] JOURNAL OF TROPICAL MEDICINE, November, 1903.
[2] "Tick Fever," JOURNAL OF TROPICAL MEDICINE, April 1, 1905.

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Original Communications.

SPIRILLOSIS IN PORTUGUESE WEST AFRICA.

By A. Yale Massey, B.A., M.D., C.M.
Benguela, West Africa.

In December, 1903, was brought to the hospital a white Portuguese trader, who was in a very weak condition. Quinine intramuscularly and by the stomach in no way improved his condition. He gradually sank into a semi-comatose state, passing urine and fæces involuntarily. The temperature of 103·4° F. only dropped at death, which occurred three days later.

Blood Examination.—The fresh blood showed innumerable spirilla in a most active condition, which knocked the red blood corpuscles about in a most lively manner. These spirilla were exactly of the appearance described by Dr. Cook, of Uganda, in a case published about that time.[1]

The trading post of this man was several miles removed from any other white man, and he lived in close contact with the natives. His habits were native.

There seems to be no doubt that this disease has been often overlooked and put down to malignant malaria or even to blackwater fever, as the urine is very highly coloured (but not the characteristic hæmoglobinuric urine). I recall the case of a white trader who was stricken in this manner during a convalescence from blackwater fever. He presented the same clinical picture and the end was fatal. I feel that a more careful search of the blood would have revealed spirilla. I have also in mind two natives who died in the same way.

Etiology.—I quite agree that probably the classical relapsing fever of Russia and other countries is but one species of not a small genus of spirillum fevers.

Clinically there seems to be considerable variance, and no doubt we shall find that different species are transmitted by different carriers.

I sent to Lieut.-Colonel Giles a specimen of the commonest tick of this district biting the human body. He has very kindly had it named for me (see Journal of Tropical Medicine, December 1, 1890, page 369), and finds it to be of the species *Ornithodoros moubata*. This tick is very commonly found in the native huts, and its special prey is the human body. Dr. Wellman[2] more recently has confirmed my observations. It is found from Egypt to the Transvaal.

That the disease is not very common, considering the bites which almost every native must receive, may be explained by an acquired immunity. Or may not the disease be carried by a species of Atylotus (Tabanus) near Socius, a large fly which is very common, attacking more especially animals such as horses and cattle, and only occasionally the human species.

Suggestions.

(1) That the term spirillum fever be used for the tropical cases, instead of relapsing fever, until the (?) various spirilloses are differentiated.

(2) That careful clinical notes be taken of each case where spirilla are found in the blood.

(3) That the biting insects of the locality be catalogued.

(4) That there be in each case a careful search for trypanosomes.

[1] Journal of Tropical Medicine, November, 1903.
[2] "Tick Fever," Journal of Tropical Medicine, April 1, 1905.

THE ABORTING OF LIVER ABSCESS: A PLEA FOR EARLY PUNCTURES.

By P. N. Gerrard, M.D.(Dub.), D.T.M.H.(Cantab.), &c.
Chief District Hospital, Parit Buntar, Krian, Federated Malay States.

On April 17th a Tamil man named Sellan, aged 26, an indentured coolie on a sugar estate, was admitted to hospital suffering from "fever."

His temperature on admission was 100·4°. He complained of pain in the chest and some cough; his respiration was somewhat accelerated, and some diminution of vocal fremitus on the right side was remarked by the dresser admitting him; this was accompanied by dulness over the lower limit of the lung.

I saw him on the 18th, and found a limited pneumonic area over the lower lobe of his right lung, with enlargement and tenderness of his liver. His blood was taken, and a relative count showed an increase of polymorphonuclear leucocytes. Owing to his being in a low state, I refrained from any exploration of his liver at this time; the physical signs, however, led me to suspect the presence at least of an acute hepatic inflammation.

On the 20th, his condition not having in any way improved, I decided to "take risks," and he was anæsthetised on the afternoon of the 20th.

I made two upward and backward punctures into his liver anteriorly about the nipple line, and aspirated in both cases about 1½ drams of blood. I then proceeded back to the mid-axillary region, and in this vicinity made three punctures without "striking" anything but pure blood.

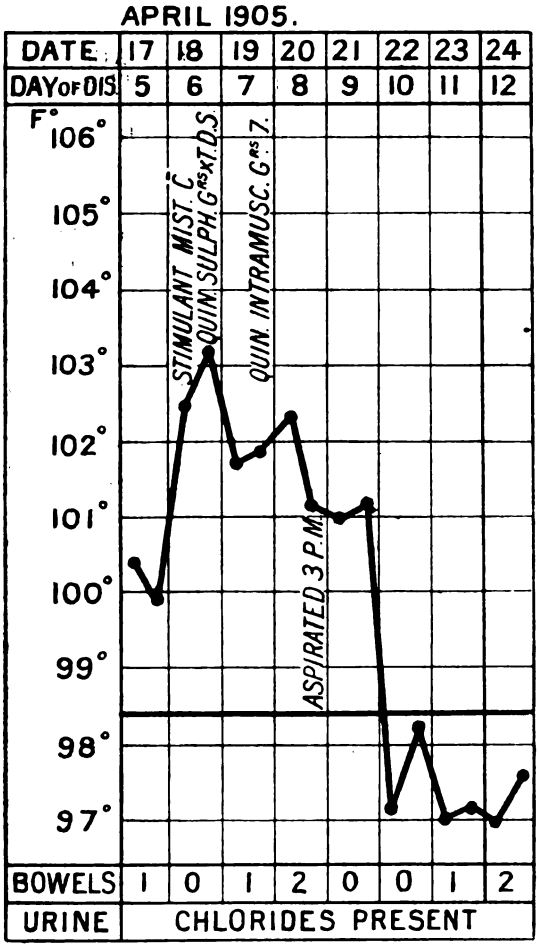
The total amount of blood extracted was approximately one ounce. As he took his anæsthetic rather badly, and my aspirator—an old instrument—was not acting satisfactorily, I refrained from further interference, and sent the patient back to bed. He recovered slowly and unsatisfactorily from the chloroform, but that evening his temperature, which had ruled over 102°, was 101°, and his general shock after operation was considerable.

On the morning of the 22nd, however, his temperature fell to 97·2°, and he eventually made an uninterrupted recovery.

Now I desire to submit two points for contemplation in this case:—

First, that, if it was a simple limited pneumonia accompanied by liver tenderness, his punctures seem to have rather improved than disimproved matters

Secondly, and in accordance with my heading, I desire to submit that in view of the following additional history the case was one of acute inflammation, threatening abscess of the liver, with the usual basal pneumonia, which was aborted by the withdrawal of blood, and possibly a certain amount of leakage subsequently from the inflamed liver. The further history I wish to quote is: That he was emaciated; that his fever did not yield to quinine, which was exhibited intramuscularly on the 18th, and again on the 19th; his temperature did not fall, however, until three days later.



That his temperature, which was 102·5° on the day of his operation, was 97·2° within forty-one hours after puncture.

That, if it had been a case of uncomplicated pneumonia, the puncture of his *liver* and his period under chloroform would have acted rather detrimentally than curatively.

On the above grounds I submit that early puncture in cases of hepatic tenderness and enlargement, with or without a "low" pneumonia, and with a high relative polymorphonuclear count, is not only permissible, but advisable.

I trust the report of this case may lead to the publication of a series of such cases by some one more favourably situated than I am in this country.

ON SOME ADMINISTRATIVE MEASURES TAKEN AGAINST MALARIA AND CONSUMPTION IN THE TROPICS.[1]

By Sir Richard C. Temple, Bart., C.I.E.

Late Chief Commissioner, Andaman and Nicobar Islands.

The Andaman Islands are situated in the Bay of Bengal, between 10° 30′ and 12° 30′ North latitude, and about 92° East longitude. The penal settlement of Port Blair is about 11° 40′ North. They are therefore all thoroughly tropical.

There are about 200 islands of all sizes grouped round the main islands, which are separated by straits so narrow as to make them form practically one island about 150 miles long and ten to fifteen miles wide. This is generally known as the Great Andaman. The islands are geographically the summits of a huge submarine mountain, and are therefore hilly everywhere, with highly indented coasts formed into numerous large and land-locked harbours. They are by nature covered with the densest imaginable jungle, and surrounded by mangrove swamp and coral-reef shores. Round about the southernmost of these land-locked harbours, situated in the southern island of the Great Andaman, is placed the penal settlement of Port Blair. The harbour of Port Blair is about eight miles in extreme length; it wanders about a good deal, and varies in width from one to two miles.

The inhabitants of the penal settlement occupy three small islands in the harbour, named Ross, Chatham and Viper, and all the country round about up to about 300 square miles. The three islands are well cleared, but the country round the harbour consists of every variety of land, from absolutely cleared and cultivated areas to natural forest. It is chiefly made up of hills and long, narrow valleys. The hills run up to about 1,500 feet, and the valleys are not usually more than half a mile wide.

The rainfall varies much in various parts and from year to year, but may be taken at 130 inches per annum, though in parts of the penal settlement the fall reaches to 200 inches in most years. Port Blair is exposed to both the south-west and north-east monsoons, and so the rainfall is well distributed over the year, but it is generally heaviest from May to September. Violent winds and storms are frequent. Continuous dry weather occurs, and then the heat becomes great. The average annual temperature is about 82° F., the diurnal variation is about 10°, and the annual average variation is about 21°. The crops chiefly cultivated are rice, pulse, maize, sugar-cane, and turmeric, and there are very large gardens for vegetables. The conditions make the settlement a natural home for the mosquito in common with all islands and countries similarly situated. Malaria is by very much the most prevalent disease.

The population consists of the convicts sent by the Government of India from every part of the Indian Empire and their descendants, official establishments, and a few traders and their families. It may for the present purpose be thus shown (Census of 1901):—

[1] Delivered at the Sanitary Congress, Glasgow, 1904.

	Males.	Females.	Total.
Convicts	11,217	730	11,947
Official establishments	1,168	...	1,168
Adult free residents, including convicts' descendants and ex-convicts	850	747	1,597
Children	773	621	1,394
	14,008	2,098	16,106

Of this population 351 are Europeans and Eurasians, and the rest are composed of every race in the whole Indian Empire from Afghanistan to Burma, from Kashmir to Madras.

The population is scattered all over the settlement in what are called technically stations and villages; a station is a place where numbers of labouring convicts are kept in jails or barracks; a village is a place where the free population or the self-supporters (ticket-of-leave convicts) live in private houses. The free and convict villages are separated into two districts, between which there is only a limited intercourse permitted. The stations are scattered over both districts at any spot where convict labour is required. The situation of stations or villages is primarily regulated by economic or administrative requirements—on hills or in valleys, on the sea-shore or inland, on cleared or forest land or in the jungle. Subject to this over-ruling necessity the medical authorities have a voice in the choice of site. There are twenty-nine stations and thirty-four villages.

The administration of the settlement is of necessity autocratic, as all the convicts and all the Government establishments have to be held under the strictest discipline, and all free residents and their dependants have to conform to rules relating to dealings with the convicts.

I was for ten years (1894-1904) the Chief Commissioner of the Andaman and Nicobar Islands and Superintendent of the penal settlement of Port Blair for the Government of India, and during the last years of my administration a serious effort was made, in accordance with the wishes of that Government, to take administrative steps towards the prevention of malaria. Statistics of late years also showed that consumption, phthisis with tuberculosis, was getting a hold on the settlement, and was likely to spread. Serious efforts were, therefore, also made to prevent this, too, as an insidious, infectious disease liable to spread unless checked.

There are many considerations in dealing with the convict sick- and death-rates that do not arise in ordinary life. The conditions are always highly artificial, as there is one constant struggle between efficiency in discipline and labour and the maintenance of a low sick- and death-rate by regulation and direct measures. The tendency on the one side is to overstrain in the direction of penality and economy; on the other side to secure "satisfactory" health statistics at the cost of over-leniency and extravagance. This fact must always be borne in mind in reading convict statistics. "Bad" years are apt to bring about strict sanitary and medical measures, "good" years to bring about relaxation of irksome regulations. This may partly account for an observation on statistics for thirty years that the mortality rates at Port Blair appear to rise and fall in cycles, as may be seen from the following abstract:—

	Period.	Years.	Death-rate.	Average Death-rate per Mille.
(1)	4 years	1871 to 1874 ...	Low ..	18·46
(2)	7 ,,	1875 to 1881 ...	High ...	49·07
(3)	6 ,,	1882 to 1887 ...	Low ...	22·02
(4)	5 ,,	1888 to 1892 ...	High ...	41·37
(5)	6 ,,	1893 to 1898 ...	Low ...	28·39
(6)	2 ,,	1899 to 1900 ...	High ...	41·25

The first group is probably the end and the last the beginning of a cycle, 1901 and 1902 being also "high" years. Thirty years of Port Blair showed also that the annual rainfall does not there bear any real relation to either sick- or death-rate, and that the death-rate bears some, though far from a continuous, relation to the sick-rate annually. Monthly rainfall has a decided effect on the sick-rate, which greatly rises regularly every year during the heaviest rains (July to September).

Again, statistics showed that acclimatisation has much to do with annual sick- and death-rates in the penal settlement, and it has been found that the highest rates are among the latest arrivals, and that the convicts of five years' residence and under are those that fill the sick and death tables.

With these general facts in view, very careful statistics were collected on fixed days during a "bad" week of 1902, viz., June 25th and 28th and July 2nd, of the men actually sick among the convicts, with a view to ascertaining facts regarding the convict sickness, on which to base measures for controlling it.

As regards the prevalent diseases, the following are the general figures for these three days, which approximate, as a matter of fact, the figures usually returned annually:—

Disease.	Percentage of Prevalence among the Sick.
Malarial fever (47 per cent.) and dysentery consequent thereon (7 per cent.)	54
Ulcers and injuries	16
Phthisis and tuberculosis	6
All other diseases including dysentery other than malarial (7 per cent.)	24
Total	100

Ulcers and injuries are classed together, as they are both ordinarily induced in the convicts by outdoor work, and are largely due to their innate personal carelessness, and so beyond the control of the authorities.

These statistics seem to place it beyond doubt that these three—malaria, dysentery, and phthisis—are the main points requiring special attention, and also that if malaria alone can be successfully checked in growth, the health of the penal settlement will put on a new aspect.

I have endeavoured briefly to explain the condition of the problem before me as Administrator, and I will now explain the steps taken and some of the difficulties that arose. But first I would like to draw attention to an old report I came across on the health of the penal settlement, made by Dr. W. H. Rean, Senior Medical Officer, in 1867, which is most instructive in the present day. Among other matters of great interest to the existing administration he

drew up two diagrams, which, in the light of existing theories and efforts, are more than instructive. These diagrams show the prevalence of fever at the time with reference to other diseases; one relates generally to the whole settlement, when the enormous preponderance of fevers then became clear, and the other to Viper Island only, where there is a decided preponderance of other diseases over fevers. Dr. Rean attributed this to the early clearing of the island and the consequent absence of miasma, where nowadays we should say it was due to the clean condition of a hilly island which prevented mosquitoes from breeding.

Working on the basis that the Government of India had accepted the theory of the connection of the mosquitoes and malaria, and that it was therefore the duty of all Government officials to assist in taking such steps as were necessary and practicable locally to reduce the mosquitoes in the penal settlement, experiments were undertaken on a small scale under the direction of the Senior Medical Officer. The result seemed to show that the following simple, effective and inexpensive steps to reduce the mosquitoes and the evils they bring with them were practicable in the neighbourhood of convict barracks, in stations and on islands, without much difficulty: (1) Lime-washing water-barrels kept up for building purposes or for fire protection, and throwing in occasional handfuls of quicklime into such as do not contain drinking water; (2) covering the barrels; (3) filling up puddles and pools; (4) clearing away rubbish; (5) tidying up generally. It was also found not to be difficult wherever convicts were congregated to take care of the spaces under barracks and buildings by (1) whitewashing, (2) sweeping, (3) clearing rubbish, (4) fumigating.

An enquiry was therefore set on foot in 1902 as to the establishment to be created from among the invalids, light-labour men and other available convicts at every station in the settlement, and as to the steps that could be actually taken on the above lines. This enquiry led to the issue of the following formal orders on the subject on November 27th, 1902.

Settlement Order.

(1) All investigation shows that the chief cause of sickness and mortality in Port Blair is malaria, to some extent a preventible disease, and that if malaria can be eliminated or at any rate largely reduced, there is nothing to fear at present from any other causes of sickness and mortality in the Penal Settlement. A serious effort will, therefore, be now made to destroy, as far as possible, the cause of malaria, *i.e.*, the Anopheles mosquito; but as it requires special training and knowledge to distinguish this mosquito from others such as it is not practicable to induce in convicts, the attempt will be made to destroy all mosquitoes.

(2) For this reason a large brigade will be formed from December 15th next as under at all stations to work as an experiment.

(3) The Mosquito Brigade will consist of the petty officers, labouring convicts and carts in the list attached, and also of as many convalescents and invalids in addition as may be available and found to be necessary.

(4) The district officers will at once choose intelligent petty officers and labouring convicts for this duty, so as to be ready for work on Monday, December 15th next.

(5) The duties will be in two classes:—

A.—Heavy Work.

Filling up puddles and hollows and borrow pits, improving (clearing and levelling), draining, clearing rubbish, clearing jungle and undergrowth for 100 yards round buildings.

B.—Light Work.

White and lime-washing, sweeping and tidying up.

(6) The instruction and supervision of the brigades will be under sub-divisional officers, overseers and sub-overseers. The brigade should be shown how to find mosquitoes and be provided with scoops (old *talis* or native fry-pans with handles) and the necessary *patus* or native hoes and such implements, and should be set on their task daily until it is done thoroughly. Each place should be gone over and over again until really cleaned up and all pieces of rubbish, such as pots and pans, tins, pottery, cocoanut shells, &c., are removed.

(7) Each member of the brigade will, while on this duty, wear a red band round his right sleeve as a badge to let all know his work.

(8) Further information is to be had from Ross's "Mosquito Brigades," now in the hands of the district officers.

Strength of the Brigades (Abstract).

	Petty Officers.	Able-bodied Labouring Convicts.	Carts.
Northern districts ...	18	81	6
Southern districts ...	9	48	4
Total	27	129	10

At the same time free residents were requested to assist in the following terms:—

Malaria is the only disease that need be feared in Port Blair and an effort is now being made to attack the cause of it, the mosquito. A mosquito brigade, men with red bands on the right arm, is being organised, whose duty is to clear away all rubbish (pots, pans, tins, pottery, empty bottles, cocoanut shells, &c.) from compounds and the neighbourhood of houses; and also to pay attention to water-barrels and generally to clear up. In this way mosquito breeding places can be gradually destroyed. It is in the destruction of these breeding places that the chance of reducing malaria is to be found. Every resident is therefore requested on his own account and on account of his neighbours to help the efforts of the brigades.

It will be seen that the gist of the orders and circulars issued amounts to a general clearing up and keeping clean, so the work of the brigades would have a general sanitary value, apart from the special object of stamping out the mosquito; but the orders did not cover the villages, of which there are thirty-four, as

these required a totally different organisation. An energetic officer having on his own account started an experiment in the convict villages, an order was issued on December 19th, 1902, to the following effect :—

The following arrangements, already partially in practice in the southern district, will be adopted in all self-supporter (ticket-of-leave) villages: (1) Every village will be divided into wards (*pattis*) according to size of about twelve houses each ; (2) in each village will be formed a mosquito brigade (*machharwalas*) consisting of one resident in each ward chosen by the sub-divisional officer ; (3) each member (*machharwala*) of the village brigade will be in charge of the ward in which he is resident ; (4) the heads of the village brigade and responsible for its working will be the chaudhri (headman) and the chaukidar (watchman) ; (5) sub-divisional officers will keep a list of all the members of the village brigades and no change may be made among them without their knowledge or permission—all changes will be entered in their lists ; (6) every *machharwala* is excused from village parades (a great privilege) ; (7) the duties of a village brigade are as follows : (*a*) every *machharwala* will go through his ward daily ; (*b*) he will drain or fill up all puddles, and see that no stagnant water lies about ; (*c*) he will remove all weeds and rubbish ; (*d*) he will collect all old tins, broken pots, broken tiles, cocoanut shells and rubbish of that kind, and put them on the rubbish-heap ; (*e*) he will see the fire-pots frequently refilled, that no pots of water are left about and forgotten, that each villager cleans up his surroundings and takes all cowdung, &c., to the refuse pit ; (*f*) he will keep tanks and large pools in his ward, or outside the village near it, clear of grass and weeds near the edges ; (*g*) he will report all obstruction or negligence of villagers to the chaudhri at once ; (8) sub-divisional officers will choose steady men for this work, who are not ordinarily fit for the heavy work of a village parade ; (9) sub-divisional officers will also see that two village parades are devoted to this work at once and that in future one parade every two months is devoted to it ; (10) sub-divisional officers and overseers on their rounds can at once perceive if a village brigade is doing its work by the appearance of the village—for a dirty village the chaudhri and chaukidar should be punished, for an exceptionally and creditably clean village their names may be submitted to the superintendent ; (11) sub-divisional officers and overseers should take every opportunity of showing village brigades how to work, and for this purpose they should apply for vernacular copies of this order, which will be issued on application.

It is interesting to note that these steps would precisely bring about the very conditions that unconsciously brought the fever rate on Viper Island below that of other diseases in 1867, according to Dr. Rean's report above quoted.

It takes a long while to rightly judge of the effects of such orders as those above quoted in such a place as Port Blair, as that depends, firstly, on their systematic and continuous intelligent application ; and secondly, the fever cases actually occurring at any given time include those of new arrivals infected elsewhere, and of recurrence of fever in men not necessarily infected in Port Blair, as great numbers, in fact the majority, of the convicts have been inhabitants of fever-infected localities. So I am not in a position to say what the effects of the administrative steps taken have, so far, actually proved to be, as I left the Settlement in May, 1903, on furlough, and resigned my appointment in the ordinary course in January, 1904. I can merely point to them as an experiment on a large scale made under exceptional opportunities of testing the value of the mosquito theory. I can, however, say that on Viper Island, a large convict station, under very strict discipline, where previously no Europeans slept without mosquito curtains, officials told me that they had begun to discard them with immunity.

In addition to the steps above explained, opportunity was taken in 1902 of the establishment of convict ambulance and first-aid classes on the lines of the St. John Ambulance Association, to spread among the convicts a knowledge of malaria and tuberculosis, and of simple practical methods of combating them, on the ground that one of the most important considerations from every practical point of view in regard to the management of convicts is the maintenance of their health, and that the chief difficulty in relation to this matter is the neglect of it by the convicts themselves, arising out of their complete ignorance of the steps necessary to maintain it. Every step taken by the authorities towards the improvement of sanitation, towards the ensuring of personal cleanliness and intelligent care of the body, towards wholesome cooking and water, and eating and drinking in a wholesome manner, towards the prevention of disease, especially of malaria, the commonest and most injurious in its results on material progress of all the local diseases, or towards the proper treatment and handling of the sick and injured, met with a stolid, impassive and never-ending resistance on the part of the convicts and every possible kind of evasion. So that all steps taken were rendered nugatory to an extent that had a palpable effect on the health returns and the concrete results of convict labour. This tacit opposition on the part of the convicts was the result of ignorance, and as it was not practicable in the penal settlement, with its 327 square miles of area spread over and worked by convicts, to employ that force and supervision in this matter possible in a prison, the importance of education in matters of health became obvious.

At the ambulance classes every man was taught elementary sanitation, the main facts concerning tuberculosis and malaria, together with the precautions to be taken against them and the importance of the careful, cleanly cooking of food and the boiling of water. The convicts for the ambulance classes were, of course, carefully selected for intelligence, character and so on, but still the conduct of the classes proved a matter of great difficulty, and it was only the steady, persevering work of the instructors, all medical officials of the Settlement, that made them a success. In the result I was quite surprised at the knowledge acquired and the interest taken by the convicts in this sort of work. One of my last public acts was to preside at an exhibition of ambulance work by the convicts, and I was much impressed, on going amongst the pupils and questioning them personally, at receiving voluble

lectures in the native vernacular on domestic sanitation, mosquitoes and malaria, microbes and tuberculosis, delivered with great pride and intelligence.

Among the steps taken against malaria was the entire covering in of the inside of a portion of a barrack in the female gaol with a mosquito net and selecting women to sleep in it at night. For some reason malaria had been specially rampant among the inmates of this gaol of late years. The experiment was not at all conclusive in its results during my time, and I did not feel inclined to practise with it on a large scale on account of a difficulty that arose. Irrespective of this, the curtains to be effective exclude the air in excluding the mosquitoes, and the women did not like this, as it made the barrack air close, a serious matter in the Tropics.

This brings me to state briefly what was done as to the prevention of consumption and the effects of the steps taken to combat that disease on those taken against malaria.

In the first place, an effort was made to make the likely sufferers, *i.e.*, the convicts, understand what consumption was, how it was spread and how it could be best met, and then every step possible was taken to attract the attention of all to the following information, which was circulated broadcast in the chief vernaculars and explained verbally at every opportunity.

NOTE ON CONSUMPTION FOR CONVICTS.

(1) Consumption (phthisis and tuberculosis) is a very fatal catching disease caused by a microbe. It causes sixty to eighty deaths every year in Port Blair. (2) The microbe is present in large numbers in the lungs of persons suffering from consumption and is coughed up with the sputum. (3) When this sputum (stuff coughed up by the lungs) dries, the microbes are apt to be blown about with the dust, and either to be breathed into the lungs or to get into food-stuffs, especially milk. In this way the disease is spread. (4) Though the disease is caused by this microbe, it is favoured by dirt, darkness, moisture and overcrowding. The greatest foes to consumption are sunshine, dryness and fresh air, combined with care about food and milk. (5) To check consumption it is important to (*a*) ensure as much sunshine and fresh air as possible; (*b*) see that all men suffering from coughs, loss of weight and night-sweats be sent to hospital in order that they may be carefully examined and if necessary treated—consumption in its early stages can be cured; (*c*) discourage the habit of spitting indiscriminately about barracks, yards and cells, particular attention should be paid to this; (*d*) when a man is sent to hospital for consumption, his spare kit should be boiled and the sleeping place he has been accustomed to occupy in the barrack should be thoroughly cleaned and disinfected.

In the next place, a special separate consumptive hospital was erected, and then a difficulty arose. Free perflation of air in dwellings is an essential in combating consumption; curtains and netting are to many minds an essential in combating malaria. What is to be done when both are present as diseases to be seriously fought against in the same place? The subject was long and elaborately discussed officially at Port Blair, and when I left it was before the Government of India for decision. My own advice on the subject, as the result of the discussion and in regard to the special locality under consideration, may, without committing any official indiscretion, be summed up as follows, given, of course, with reference to local financial capacities.

Phthisis as a slow infectious disease must be dangerous in an island community like that of Port Blair, and it is undoubtedly spreading among the convicts. The main cause does not lie in the supply of food, but apparently in the insufficient lateral sleeping floor area in the barracks. A practical remedy at a reasonable cost appears to lie in the construction of special additional barracks for invalids and convalescents with a special allowance of floor area. This will of itself admit of a general increase in lateral floor area in sleeping accommodation throughout the settlement. A contributory cause is wet or damp clothing during the excessive rains in the settlement. The cheapest remedy lies in the supply of additional clothing. The proper prophylactic appears to be early detection of the disease, involving systematic frequent medical inspection and periodical weighment of convicts. A small increase in the subordinate executive and medical staffs will effect both objects to a profitable extent.

Malaria is the chief disease of the settlement, and its prevention or reduction is a matter of first importance to the general welfare. The practical remedies appear to be the establishment of mosquito brigades, which are of great general sanitary value, irrespective of their usefulness as regards malaria; the establishment of branch dispensaries at out-stations; the issue of more clothing to the convicts; the general administration of quinine as a prophylactic. The mosquito net is impracticable for reasons given below. The only expenditure beyond that required for phthisis necessary here is for the quinine prophylactic.

The local dysentery is much mixed up with malaria, and is not attributable to the water supply, but to infection, and in some degree to exposure while at work. The exposure is unavoidable, and need not be considered in devising remedies. The local dysentery is, in fact, "institution dysentery," for which the practical remedy appears to be segregation on detection. This need not involve Government in additional expenditure.

The special point to be always borne in mind in considering measures to prevent the spread of the three dangerous diseases in Port Blair—malaria, dysentery, and phthisis—is that to prevent the insidious infection of phthisis there must be the freest perflation of air possible in dwellings. This prohibits the mosquito net as a remedy for malaria in Port Blair convict barracks. As both phthisis and malaria are equally dangerous in the settlement, the choice must be made between free perflation of air and the mosquito net, and, since the mosquito brigade is a good remedy for malaria, the mosquito net must be left out of consideration.

This opinion has since been subjected to the official mill of the Government of India, and, no doubt, also to those of other and conflicting advisers, and what action has been taken on it I do not know. But it

seems to me that the following points of general interest result from the above remarks and observations:—

(1) Malaria is an overwhelming cause of incapacity for work and of death in the Tropics.

(2) A place like the penal settlement of Port Blair affords exceptional opportunities for experimental administrative measures for combating it.

(3) The presence of malaria and consumption in the same locality as dominating dangerous diseases (the usual dangerous Oriental epidemics like cholera typhoid, plague, small-pox, beri-beri, are absent from the penal settlement) presents a difficulty in dealing effectively with malaria on existing theories and practice which requires full consideration.

EQUIPMENT AND HYGIENE ON "SHOOTING TRIPS."

By G. A. Park Ross, M.B., D.P.H.
Medical Officer Anglo-Portuguese Boundary Commission, Zambesia.

Among the many articles which are written from time to time on the subject of kit, equipment, and hygiene for travellers and sportsmen in Africa I have not yet noticed one dealing with that prolific source of ailments, namely, the "shooting trip." By this term I define a short expedition (lasting anything from two days to a fortnight) in pursuit of game made from one's main camp as a base, or, in the case of a resident in such a country, from one's station. During two dry seasons and part of a wet one, of constant travel in Northern and Southern Rhodesia, Portuguese Zambesia, and to a less extent in British Central Africa, I have observed that men who, while out on their stations or when touring on duty or business, take all hygienic precautions, yet, when away for a week's shooting, consider it necessary to discard pretty well everything not indispensable to existence. Certainly in Northern Rhodesia, which, taking it as a whole, is a healthy country, most men's malarial fever and much of their dysentery originates in one of these "shoots." I am aware that many men take, and most books recommend, an outfit compared to which that detailed below is a mere fraction, but I am inclined to the opinion that in many cases there is a certain relation (an inverse ratio) between the size of the "bag" and the bulk of the kit. In view of recent scientific knowledge, however, precautions as to protection from mosquitoes, filtration of water, &c., cannot be disregarded, and it is the idea of showing how these may be introduced into the most mobile equipment (mine consists of three loads) that has prompted this article.

The one desideratum in the following of large game is mobility. Loads must be under 30 lbs. in weight, and with such a good carrier has no difficulty in following a European almost at the latter's pace through any sort of country. Of carriers there must be an abundance, but they are wanted to carry game, not personal equipment, and the following articles constitute what I consider an irreducible minimum for the dry season, and even when there is a chance of light, occasional showers:—

(1) One small load of food, mostly biscuits and flour, tea or coffee, cocoa, condiments, spirits, candles, and a lamp.

(2) A kit-bag containing changes of clothes, boots or shoes, carbolic soap, and sponge.

(3) Two or more blankets and a pillow slip.

(4) Small Berkefeld filter, one spare candle and at least four canvas water-bottles. A couple of light cooking-pots, frying-pan, kettle, and a canvas bucket and basin.

(5) A large mosquito net, } to be detailed
(6) A single-pole machilla with cover, } later.

(7) The following dressings and drugs:—

Quininine bihydrochloride tabloids, grs. v.

An efficient cholagogue and carthartic, as calomel and colocynth compound.

A tabloid equivalent of tinct. camph. co. (opium and camphor).

Tabloid biniodide of mercury (for wounds).

Clinical thermometer, two or three rolls of cyanide gauze put up in sterilised packets, a bandage or two, and some lint and stout plaster, to be used in treating "boys."

(8) A hypodermic syringe in metal case containing tab. morphia, gr. ¼, strychnine, cocaine, and apomorphine. This last, with a tin of Brand's beef essence, should be carried in one's cartridge-bag, when its total weight is equivalent to three ·450 cartridges.

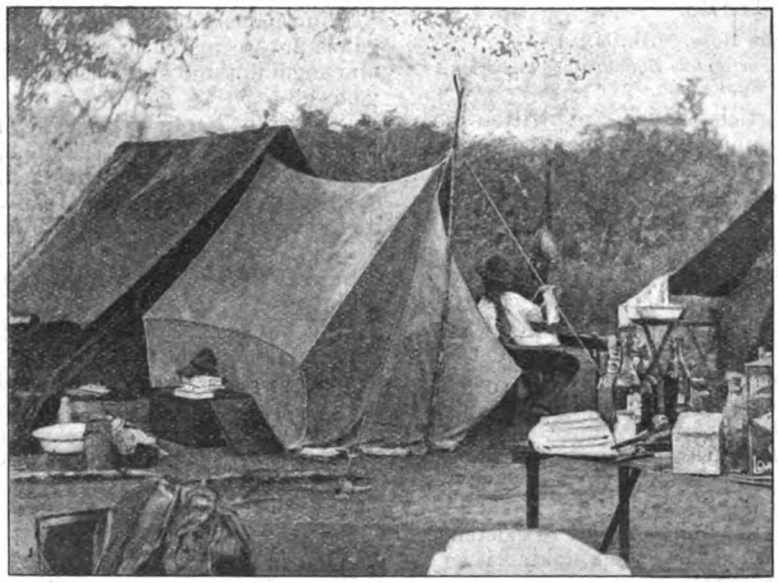
For lay information I may state that the articles enumerated under (7) can be carried in the pocket of a gun-case, if one is taken, or if made up separately from a package 6 in. × 4 in. × 2 in., and weigh less than 1½ lbs., and they can be obtained from any reliable firm, as Parke, Davis and Co., or Burroughs Wellcome and Co., and from the former by mentioning this paper.

All articles specified under headings (1) to (7) can, if desired, be carried by three men, everything except food and cooking-pots being put into the machilla, which is, when thus loaded, a light burden for two men out of the three.

Food.—Little need be said as to what is actually taken, as everything depends on individual tastes. The inventory should, however, contain some form of fruit, and I can recommend the dried apples sold by the Army and Navy Stores as being light to carry and most palatable. As regards wines and spirits, none of the former and little of the latter is the best rule. Alcohol in any form during the day spoils one's shooting, and is distinctly inferior to tea as a pick-me-up; but when dead tired after a long day in the hot sun, it is distinctly serviceable even as an appetiser. These goods should be carried in a light wooden box, preferably of "venista" construction.

There is a great divergence of opinion among sportsmen as to how meals should be arranged. For most game the best shooting time is just about sunrise, and if there is any distance to be traversed, a very early start may have to be made. Again, it is a common occurrence to have to keep going in the hot sun until eleven or twelve o'clock without a halt, and on some occasions nearly all day. In view of this possible contingency, I am of opinion that a breakfast consisting merely of a cup of coffee and a biscuit taken before daylight is a great mistake, even when considered

from the sportsman's point of view, apart from its effect on the body. It is impossible to expect good shooting of a man who has been walking in the hot sun for four or five hours, and whose last square meal was taken probably over sixteen hours before. The man who gets up half an hour earlier and has a breakfast including porridge and meat, uncomfortable though it may be in the dark on a cold morning, has the best chance after ten o'clock, and can go on all day without anything more if need be. In addition, the heavy breakfast saves the trouble of providing a large lunch, which in itself is undesirable, as it conduces to laziness in the afternoon. As an emergency ration I carry Brand's beef essence in my haversack or cartridge-bag, but cocoa and biscuit make an excellent substitute, only Brand's requires no utensil to cook and serve in. Chocolate is certainly good as a material to chew while walking. I have not tried kola nut.



Prolonged exertion in a high temperature without food is in many people provocative of considerable gastric irritability. The unfortunate subject arrives in camp exhausted, and, even if not actually vomiting, has no appetite. A cup of hot tea, whisky, or bovril will usually meet the case; but if these are ejected, or if the irritability remains, a half teaspoonful of baking powder in a cup of hot water should be sipped, and a hot foment or mustard applied to the epigastrium. Some soup may be tried about half an hour afterwards; but, in any case, quinine 10 to 20 grs. should be taken that night, as these may be the premonitory symptoms of an attack of malarial fever.

Clothing.—Let that be simple and of the oldest. Loose drill khaki trousers and a very thick flannel shirt is the best combination for most sorts of bush, also for open country, and, besides being cooler, is better adapted for crawling while stalking than almost any other rig. Trousers are quite as good a protection from thorn as any form of breeches, and, besides, are better suited to a hot climate. Leggings may be worn if desired, but should be made of some fairly soft material, as tanned canvas or felt. They are certainly cooler than putties, and the "support" given by the latter is, I think, exaggerated, though they would be invaluable where the sportsman was afflicted with varicose veins in the legs. It is a mistake to use any material for trousers to which grass seeds adhere easily, and also to have the shirt so close fitting or its material of such a nature that it readily gets clammy with perspiration, and sticks. Pockets should be put in well at the side and fairly low down, otherwise the material in them may chafe the nipples. Thick shirting is a sufficient protection against sun anywhere south of lat. 10°, and does away with the necessity and discomfort of spine-pads, and it is really cooler and more comfortable to walk in than thin stuff. A complete change of clothes and socks every day before dinner is all one can expect if following game, but if three pairs of trousers, three shirts, and at least six pairs of socks, are taken, he ought to get on comfortably with that for a week at least, and pyjamas can be dispensed with.

Inflammation of the nipples from a chafing shirt, ulceration of the ankles from grass seeds, and sore feet, have to be guarded against, and these can be avoided if shirts and socks are changed often enough (the latter twice daily, if possible), even in the absence of enough water to wash properly. All scratches from thorns, &c., should be carefully washed with carbolic soap, or, if extensive, bathed with biniodide lotion, as soon as possible. One can nearly always get enough water to have a sponge down. It should be warmed, and care taken to avoid a chill, a likely enough occurrence during a rub or sponge down in the dark after a hard day, and the usual sequel to such a chill is malarial fever, possibly blackwater, and in any case

THE

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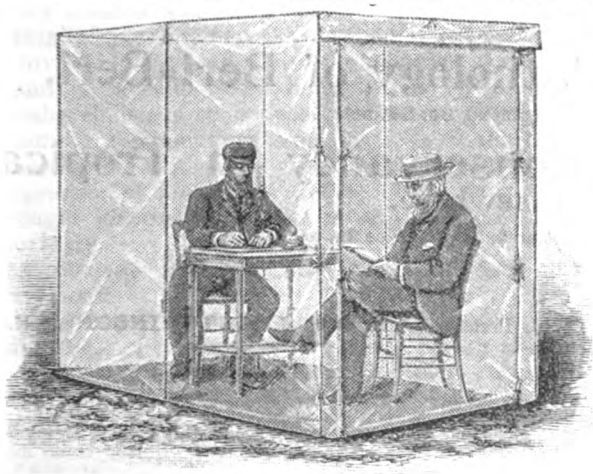
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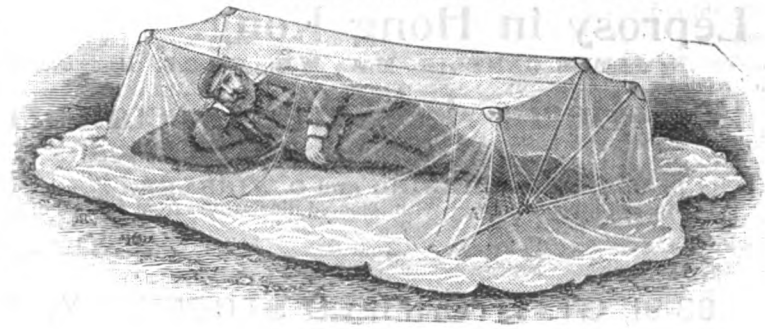
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Colonial Medical Reports—No. 11—HONG KONG (*continued*).

REPORT ON THE INFECTIOUS DISEASES HOSPITAL.

This report on the Infectious Diseases Hospital, together with comments on the cases treated during the year ending December 31st, 1904, is written by Dr. Koch, the Medical Officer, and addressed to the Principal Civil Medical Officer for the Colony.

The Plague Epidemic.—The outbreak of plague, as was generally anticipated, I think, was not of an extensive nature, but the intensity of the disease was comparatively great and the mortality high. Thus of a total prevalence of 510 cases, or perhaps it would be more correct to say that this number of cases was notified, the deaths amounted to 497—a percentage of 97·4, this being only one decimal point lower than the death-rate in 1902, which was the heaviest since the appearance of plague in 1894.

The Variety.—There were 59 cases of bubonic plague admitted and 18 cases of the septicæmic variety. No cases of the pneumonic or the intestinal variety came under treatment. This is naturally too small a number to work with satisfactorily as regards statistics, still it is not uninteresting to consider percentages. The bubonic variety constituted 76·6 per cent. and the septicæmic variety 23·4 per cent. of the cases admitted. Comparing this with regard to the total cases notified, I find that the percentage of bubonic cases is only 63·6 and of septicæmic cases 31·4, the cases of pneumonic plague only constituting about 5 per cent. The difference in the percentages of cases notified and cases admitted for treatment is, I think, due to the fact that to the native mind plague is invariably associated with the presence of a bubo or glandular swelling, and hence probably there is a greater chance of such a case of bubonic plague being taken for treatment or taken away from the colony, whereas the septicæmic variety conveys but a vague impression of the disease and of infectivity and is not brought for treatment, but is only diagnosed at the mortuary.

Pneumonic Plague.—There were no cases under treatment.

Intestinal Plague.—No cases of this variety were admitted, nor indeed did any occur during the year. I think it can be safely stated that of the numerous cases of plague that have been under observation since 1894 in all parts of the world this particular variety has been conspicuous by its rarity. The evidence on its behalf is weak. It should be remembered that the plague organism is not a very resistant one, that heat and sunlight rapidly destroy it, and desiccation caused by a high atmospheric temperature is also rapidly fatal to it. Apart from this, it is known that it is extremely sensitive to the action of mineral acids which have a powerful and rapidly destructive effect on it. Under these circumstances primary infection of the alimentary tract—to constitute the intestinal variety—by infected food seems highly improbable. And this apart from the fact that proof is still needed to demonstrate the presence of the plague organism in the foodstuffs sold in the open market.

Sex Incidence.—Of the 77 admissions, 54 were males and 23 females, giving percentages of about 70 and 30. This ratio is not, in my opinion, expressive of a greater susceptibility on the part of the male sex. The susceptibility of the sexes is alike of the same degree. The difference in the ratio is to be explained on other grounds, most probably concealment and removal of the female sick.

Its Incidence with Reference to Nationality.—All the patients, with the exception of two Indians, were Chinese. Contrary to what obtained last year, no Europeans were admitted suffering from the disease —in point of fact, no European contracted the disease this year.

Age Incidence.—My numbers are not large enough to do anything more than to indicate that in the bubonic variety males were affected between the ages of 16 and 40, and females fairly evenly during the quinquenniads of life up to 70 years. The septic variety prevailed among males principally between the ages of 16 and 35.

Recovery-rate.—Of the cases of bubonic plague, 3 males and 6 females recovered, and of the septic variety, 4 males and no females. This gives a total of 13, a percentage of nearly 17 on the cases admitted. Analysing them still further we arrive at these percentages :—

Bubonic plague ...	Males 8 per cent.	Females 29 per cent.
Septic plague ...	Males 25 per cent.	Females *nil*.

These percentages depend upon numbers too small to generalise from.

Death-rate.—This amounted to 82 per cent. of the cases admitted and gives percentages with reference to the bubonic and septic variety as follows :—

Bubonic plague ...	Males 91·6. ...	Females 71.
Septic plague ...	Males 73. ...	Females 100.

Here, too, these percentages should not be used too implicitly ; for instance, only two females suffering from septic plague were under treatment, and both died, giving this enormous percentage. It is quite probable that with a large number under treatment the results would not have been the same.

It will be noticed that the death-rate among those under treatment amounts to 82 per cent., whereas in all cases notified it amounts to 97 per cent. This may be held to demonstrate what is evident, that the care and attention a patient receives in hospital give him a better chance of recovery—with reference to the number we are dealing with, we have a difference of 15 per cent. On the other hand, however, I am inclined to the opinion from the cases which I have had the opportunity of observing both in this hospital and in the Tung Wah Hospital, that the heavy mortality on the total cases notified indicates that the disease appeared in a more virulent form, and that no treatment at present known was likely to have had any beneficial result.

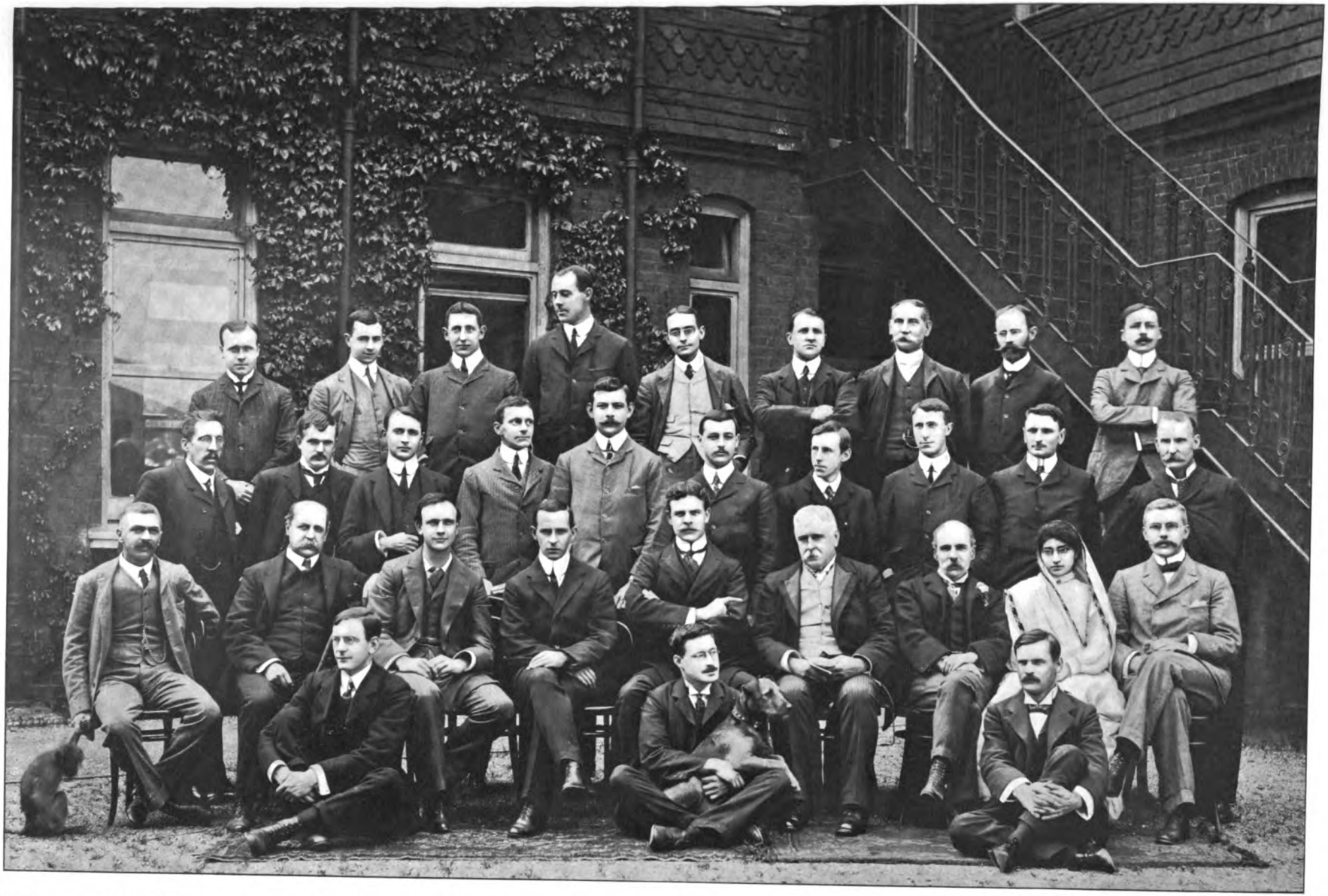
Does Early Treatment on the Onset of the Disease Tend to Direct it to a Successful Issue ?—I have drawn up a table showing the duration in days of the illness previous to admission. It will be seen that on the

third day after the onset 12 cases of bubonic plague were admitted of whom 1 recovered, and 2 cases of septic plague of whom also 1 recovered. On the fourth day of illness 16 cases of bubonic plague were admitted of whom 2 recovered, and 2 cases of septic plague which succumbed. The history could not be definitely obtained from 20 cases of bubonic plague, and 9 cases of septic plague. These cases were admitted practically *in extremis*, and I am strongly of opinion that the disease was of very recent onset—certainly not more than four days. It will thus be seen that 61 of the 77 cases were admitted comparatively early, and that active treatment had no effect on them, for only 4 recovered, or a little over 6 per cent. Hence I conclude that the disease was of a much more severe type than in 1903: that in spite of cases having been brought in early general poisoning of the system by the plague organism was developed so early, and was of so intense a character that no treatment could have prevented a fatal issue.

As a corollary I append another table (No. V.) howing the length of residence in hospital of patients who died. It will be observed that 8 died within six hours of admission, 13 within twelve hours, 16 within eighteen hours, 4 within twenty-four hours, 11 within two days, and 4 within three days. Only 7 cases lived for a longer period. Thus 41 cases died within the first twenty-four hours—they were in a hopeless condition, and no treatment however energetic could have availed them. Until a serum is discovered which is as efficient in its action as the antitoxin of diphtheria we must rely upon the natural immunity of the human body to antagonise the poison of the plague bacillus, and in our present state of knowledge we are unable to say how long the bacillus remains in the blood before this immunising action becomes of sufficient potency to neutralise the poison and its action.

The Distribution of the Bubo in Bubonic Plague.—The number of cases of bubonic plague amounted to 76·5 per cent., as compared with 23·5 per cent. of cases of septic plague, that is, a ratio of 3 to 1. As it has been asserted lately that one of the principal avenues of infection is by means of the alimentary tract (through the medium of food), this preponderant proportion of the bubonic variety is noteworthy. That there is direct infection and inoculation by abrasions and wounds of the skin there is no doubt, and it must not be forgotten that it is quite possible for direct inoculation to take place through small wounds whose presence may be lost sight of or may remain undetected. A reaction at the seat of inoculation may not always occur—the infective material may be absorbed and conveyed by the lymphatics to the nearest chain of glands without showing that they (the conveying vessels) are affected in any way. In this way the infection may be carried to the more superficial glands or to the deeper. These glands act as a sort of reservoir in which the bacilli accumulate, practically stagnate and partly die; and should necrotic changes be set up they are entirely destroyed and rendered powerless. During this period they elaborate the protein poison which rapidly diffuses through the lymph channels, is taken up by the circulation and acts in the direction of paralysing the vaso-motor nerves, thus leading to hæmorrhagic effusions, to dilated blood-vessels, and to a dilated and debilitated heart. The principal channel of infection, then, being the skin, it is not difficult to understand on reference to Table VI. that most glandular swellings were to be noticed in the femoral region—31; and in the inguinal region—11, and in both femoral and inguinal regions—7—pointing to infection through that part of the body most likely to come into contact with infectious material, the lower extremities. Glandular swellings in the axillary region occurred in three cases, in the cervical region in 4 cases, and in the cervical region in combination with the femoral region in 2 cases. These cervical buboes I attribute to primary infection of the tonsils, which in such cases were enlarged and painful.

The Diagnosis of Plague.—Since we have become familiarised with using for diagnostic purposes a thick blood film decolourised and stained with a basic dye, as was first adopted here by Dr. Bell, there scarcely has been any hesitation in naming as the plague bacillus all organisms that showed a bipolar reaction, and diagnosing as plague any case in whose blood films, prepared thus, these organisms were found. Such a method of diagnosis is far too summary. This cannot be too strongly pointed out and insisted upon. Bipolar organisms, fairly commonly distributed, exactly like the *Bacillus pestis* microscopically, are very easily mistaken for it. Should a patient present the clinical symptoms of plague and a bipolar organism be discovered in the blood we might safely infer without further tests that it is the plague organism. Should, on the other hand, a bipolar organism be found in a blood film or a smear, and the person shows no other sign suggestive of plague, the presence of the organism is most evidently a contamination. Cases have been diagnosed as plague from the presence of this bipolar organism in a blood film without especial reference to clinical symptoms, and mistakes have occurred even when the greatest pains and care have been taken to avoid the possibility of contamination. The diagnosis of plague is a very important matter and should be based upon a clinical as well as a bacteriological diagnosis, and not upon a microscopic diagnosis alone. In the case of the lower animals equally great care should be taken, and no positive opinion can be accepted unless every bacteriological test has been thoroughly worked out and experimental proof obtained. Otherwise the diagnosis not only violates scientific deductions and accuracy but, what is perhaps an equally grave matter, it causes a scare with regard to fresh sources of infection. It should therefore be recognised that the presence in a blood film or smear from any tissue or organ of a bipolar-staining organism does not necessarily mean *per se* that that organism is the *Bacillus pestis*. During an epidemic of plague, or when the patient presents the clinical symptoms of the disease, we may safely conclude that bipolar organisms found in such films are true *Bacilli pestis*, assuming of course that every care and precaution has been taken in making the film so as to avoid contamination. On the other hand, the absence of the *Bacillus pestis* from such films does not negative the diagnosis of plague when clinical symptoms are present.



Top Row: A. T. Stanton (Sen. House Surgeon). D. Mackinnon, W. D. Inness, E. V. Croker, W. L. M. Goldie, G. B. Warren (Laboratory Assistant). Lt.-Col. C. H. Bennett, I.M.S., Surgeon E. R. Stitt, U.S.Navy, E. G. H. Weir (House Surgeon).

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THE LONDON SCHOOL OF TROPICAL MEDICINE.

18th Session. May - July, 1905.

Bale, Sons and Danielsson, London.

The Distribution of the Bacillus Pestis.—It is generally accepted that the *Bacillus pestis* is found in the peripheral blood immediately preceding death, but later researches here show that it may be found also at any time during the course of the illness, thus demonstrating the presence of the bacilli in the general blood stream, practically immediately after infection. During the course of the year I paid some attention to this point, and was struck with the varying results obtained, which I have summarised in Table X., and which I shall briefly note here. I may premise that all the cases examined presented the classical clinical symptoms of plague, and that repeated examinations of slides were made in each case.

Detailing the results of my examination it will be noticed :—

(1) That the *Bacillus pestis* was found in some cases during life, and also after death in all the organs—the heart blood, spleen, liver, lungs.

(2) That in some cases (bubonic plague 6, septic 1) the *Bacillus pestis* was not found immediately before death, though it was found on several occasions previously during the illness.

(3) That in other cases (10 of bubonic plague and 1 septic) no plague bacilli could be found during life, but were found after death in the various tissues and organs.

(4) That in 9 cases of bubonic and 1 of septic plague the bacilli were found at the first examination, but not on subsequent examinations.

(5) That in 1 case of bubonic and 1 of septic plague the bacilli could not be found either during life or after death.

(6) That in 9 cases of bubonic and 3 of septic plague which recovered plague bacilli were found in blood films on their admission.

(7) That in 17 cases of bubonic and 7 of septic plague the bacilli were found *ante-mortem*; no *post-mortem* examination was made in these cases.

(8) That in two cases I found the bacilli in the peripheral blood after convalescence had been fully established.

It would seem natural to conclude from these observations that the presence of the *Bacillus pestis* in the blood—the peripheral blood—is not constant, that it is not to be found on every occasion of examination in the course of the disease, nor is it present always immediately before death. It is undoubtedly a fact that the bacilli are always to be found in the bubo during its early stages, but when suppurative and necrotic changes are set up—when the bubo maturates—they cannot always be found. It would seem that streptococcic infection has dominated the position, and that the swarm of leucocytes ingest the plague bacilli and either destroy them or render them inert. In smears from the spleen I was able to find the plague bacilli in the substance of the phagocytes, and in buboes which matured and suppurated I found the bacilli within the substance of the leucocytes while the cocci of suppuration were free. What value is to be placed, as regards its infectivity, on the presence in the peripheral blood of convalescent cases of the *Bacillus pestis* is doubtful. Whether the bacilli are always present in the blood of convalescents, if not always under what circumstances and in which variety of plague, and finally the length of time they persist after convalescence is established, are questions which require elucidation.

The Treatment of Plague.

Owing to the severe type of the disease treatment was practically hopeless in the great majority of the cases, and in addition a large number were brought in *in extremis*. Different methods of treatment were adopted, and I summarise the results.

(*a*) In the first and earliest method, the administration of carbolic acid in large doses, which apparently gave such satisfactory methods in the previous year, was again tried. The cases were put on 12 grains of the pure acid, made up in a palatable mixture every two hours, and this was continued during the whole course of the illness. Carboluria never developed. Digitalis and strychnine by the mouth and hypodermically were also administered. With such large doses of carbolic acid there is often a feeling of depression, a buzzing in the ears, and a feeling of languor and apathy—"as if you were floating in the air when you closed your eye," as one patient expressed it. When the patient is able to appreciate it, the emetations are objectionable. The results by this method were as follows :—

Bubonic plague.—Cases treated		Males	17
		Females	4
	Recovered ...	Males	2
		Female	1
	Died	Males	15
		Females	3
Septic plague.—Cases treated ...		Males	9
		Female	1
	Recovered ...	Males	2
		Female	0
	Died	Males	7
		Female	1

(*b*) On the assumption that a bactericide of sufficient strength injected directly into the circulation might be efficacious, I tried a solution of formic aldehyde prepared in the same strength as Maguire uses it in cases of pulmonary tuberculosis. Only three cases were subjected to this treatment. They were all very severe cases, practically hopeless, so the efficacy of this method cannot be estimated; but I am prepared to try it again when opportunity offers. Fifty cubic centimetres were injected directly into one of the veins of the forearm. The following are the particulars of the cases :—

(1) A Chinese male, aged 42, suffering from bubonic plague, with a well-developed left femoral and left inguinal bubo. He was admitted in a practically moribund condition, was delirious, the pulse was very weak and small, and the tongue dry and brown. Stimulants, alcoholic and other, were freely administered, and an injection of 50 cc. of hæmasepsin given intravenously. He died nine hours after admission. At the *post-mortem* examination plague bacilli were found in the spleen but none in the heart blood or in the bubo.

(2) A Chinese male, aged 28, in an advanced stage of septic plague. Had an intravenous injection of

50 cc. hæmasepsin three hours after admission. Seventeen hours afterwards had an injection of 10 cc. of Yersin's serum. Not the least sign of any improvement. Died twenty-two hours after admission. A *post mortem* was made, and smears taken from the organs, which were thrown away by a misunderstanding, so the presence of the *Bacillus pestis* could not be determined.

(3) A Chinese female, aged 48, suffering from bubonic plague. Has a left inguinal bubo and left femoral bubo. No plague bacilli could be found in the blood. She was a well-nourished woman but was in an extremely weak condition. She was given three injections of hæmasepsin, 50 cc. intravenously, on successive days. After the first injection the temperature went down from 102° to 99·4°, but the next day, after the second injection, it ran up to 104·8°. She rallied somewhat, the temperature came down, and oscillated between 100° and 103°. After the third injection she showed some distinct improvement—the pulse became stronger and she was much lighter. Suddenly, however, she changed for the worse and died from heart failure, sixty-seven hours after admission. At the *post-mortem* examination the buboes were crowded with plague bacilli, which were also found in the heart blood and spleen.

(*c*) *Yersin's Serum.* — Great expectations were formed at one time of the curative properties of this serum. As it is prepared, there would seem to be lacking in its composition a complement which should enable it to neutralise or counteract the protein poison secreted by the plague bacillus. With the hope of supplying this deficiency I mixed with it an equal quantity of serum taken from convalescent plague cases, which presumably contained the immune body. This mixture of Yersin's serum plus immune body would by inductive reasoning be quite as efficient as the diptheria antitoxin. In practice, however, it did not prove so.

(*a*) *Treatment by Means of Yersin's Serum Plus Serum from Convalescent Case of Bubonic Plague.*— Three cases were treated by this method. Yersin's serum 10 cc. was mixed with 10 cc. of serum removed from the vein of a convalescent case of bubonic plague, which showed the *Bacillus pestis* in the blood on admission, but not on convalescence. I detail the results.

(1) A Chinese male, aged 27, suffering from septic plague, and showing plague bacilli in the blood on admission. He was given four injections on successive days. The first noticeable result was that diarrhœa occurred, the motions were yellow and very liquid. This lasted for ten days. The pulse was weak. Two days after the last injection the temperature became subnormal, and he had low muttering delirium, and later showed a tendency to drowsiness. The temperature then went up and kept varying between 98° and 99·6°. The bowels became constipated, and later became regular in their action. The patient then gradually and steadily improved, and was discharged well after fifty-six days in hospital. No plague bacilli were found in the blood on discharge. It is interesting to note that almost immediately after his discharge he contracted beri-beri, for which he was treated at the Tung Wah Hospital, and recovered.

(2) Chinese female, aged 27, suffering from bubonic plague. A well-nourished woman, has a left femoral bubo; is delirious. Pulse fairly strong. Was given injections as above described for four days successively, one injection each day. After the first injection purging set in—the motions were frequent, yellow and watery. This continued for two days. On the seventh day after admission a diffuse cellulitis set up over front of right upper arm, apparently originating from a bruise. The pulse became weaker, the delirium continued. Then purging of the same nature set in again and she died thirteen days after admission, and sixteen days after the incidence of plague. The *post-mortem* examination was interesting. The intestinal tract showed no pathological change, but the usual signs of plague presented themselves. It was noteworthy, however, that no plague bacilli were found in the heart blood, nor in the spleen, liver, bubo, or peripheral blood. They were found in the blood on admission, but were absent from the blood taken immediately before death.

(3) Chinese male, aged 30, was admitted suffering from bubonic plague. He was in a very low condition. Plague bacilli were found in the blood. An injection of mixed serum was given, one into the peritoneal cavity and a second full dose into the substance of the bubo. The next day purging set in—the motions being yellow and loose. This subsided in a day. A little tenderness over the abdomen quickly subsided, but a certain amount of œdema set in around the bubo. His condition seemed to improve a little, but he died on the fifth day after admission. At the *post-mortem* examination no plague bacilli were found in the bubo, spleen, liver, lungs, kidneys, or heart blood. It is worthy of note that no bacilli could be found in the peripheral blood examined immediately before death.

(*b*) *Treatment by Yersin's Serum alone.*—Thirty-two cases of bubonic plague and seven of septic were treated with Yersin's serum. An injection of 10 cc. was made subcutaneously, or into the bubo. The number of injections varied from one to four, as were considered necessary, in each case. The results were as follows:—

Bubonic plague: Recovered, M. 1, F. 5; died, M. 20, F. 6.

Septic plague: Recovered, M. 2, F. 0; died, M. 3, F. 2.

Total under treatment: Bubonic 32, septic 7.

Percentage of recoveries in bubonic cases, 19; in septic cases, 30.

It is difficult to estimate exactly what the effect was of the administration of the serum, owing to the fact that the reaction exhibited by the patient was not of a definite nature. It is a matter of fact there was no amelioration in any direction that would justify me in saying that the serum was to that extent effective. If the patient was delirious the delirium might continue or abate irrespectively of the serum. The effect on the temperature was equally uncertain, in some cases a reduction to the extent of a degree or so might occur, in others the temperature would rise; and so, too, was the effect on the circulatory system—

(To be continued in next Journal.)

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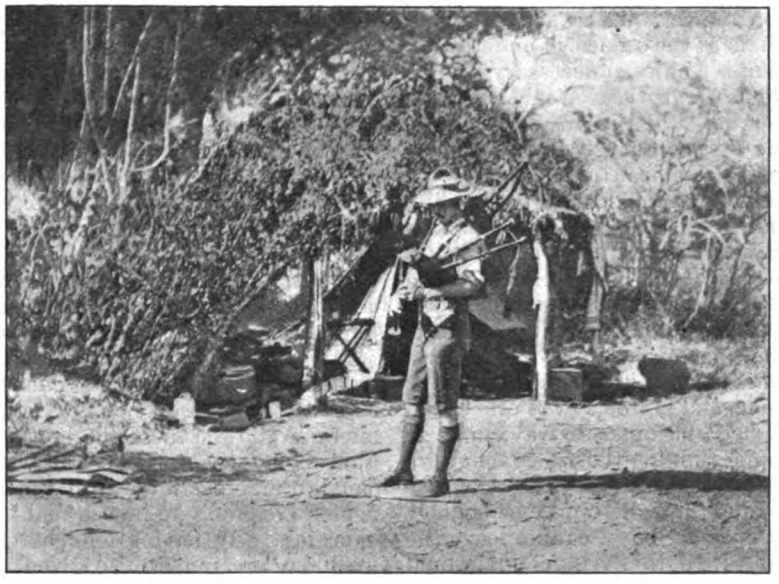
a spoiled trip. I do not consider the wearing of a cholera belt by those unaccustomed to them in any way essential.

Headgear.—A pith helmet is the safest headgear, and it must project enough at the back to shade the neck, and also be carried high enough behind to admit of shooting in the prone position without its tilting forward over the nose. There are no helmets made which are perfect in this respect, but the regulation "Gippy" is the best as far as shape goes. Helmets, constructed of cork, as most of the "shikari" patterns are, possess an almost metallic hardness and resound like a drum if tapped by a twig, and for this reason alone, to say nothing of their inferiority in protection, they cannot be considered on the same basis as those made of pith.

I am aware that many types of pith helmet put on back to front admit of free movement of the head in any of the shooting postures, but rather than run the risk of spoiling a shot, or dropping one's helmet while stalking, I think it better to wear a felt hat when closing on game. It can be carried by a gun boy and handed along with the rifle. Most felt hats are far too heavy, specially the ordinary double terai. The simplest arrangement is to have a single, fairly wide, thick felt hat fitted with a head band supported on corks, as is done in the ordinary helmet. This allows of free ventilation and keeps the temples well away from the side of the hat. A large coloured (preferably orange) silk handkerchief should be bunched into the crown before putting on the head. Such an arrangement sticks on, is as light or lighter than a helmet, and is almost as efficient a protection against sun. I gave this a good trial in September, 1904, in the Loangwa Valley, and was surprised at the efficacy of the arrangement. I hear, in spite of a terrific sun, some of the farmers go about in panama hats with a handkerchief inside. A puggaree may or may not be worn. It increases the protective power of the hat and also the weight. The important points are the coloured handkerchief between the crown of the hat and the top of the head, and the ventilating band round the inside.

Footwear.—The type of boot worn must depend on the kind of country and as to whether the sportsman has "hard" or "soft" feet, and is accustomed to a support round the ankles. In approaching large and dangerous game to shoot which it is necessary to get quite close, some sort of footgear which is noiseless is absolutely essential.

Boots with felt soles are excellent, but cheap rope-soled shoes do quite well, and with stout canvas "continuations" a sort of boot is obtained which is light, noiseless and proof against grass seeds. A single pair of these is good for 150 miles, costs 2s., and should have the sole steeped in water before using for the first time. One elephant hunter I know wears ordinary boots when following on a spoor and changes into these shoes when he gets close to his game. They, however, give but a poor grip on smooth grass, but on stones, burnt grass and on ground covered with dry twigs, they are much better than leather in any form. I have not given strong corrugated rubber a trial, but certainly a boot with soft leather upper (as doeskin) and a sole of rubber with inside sole of cork would be an excellent article for all sorts of country and would not "draw" the feet. Above all, boots with heavy uppers and thick soles are to be avoided, specially soles which are inflexible, a character they are apt to assume if screwed on.



The stiff soles cause sore feet, and it is impossible to tread noiselessly in heavy boots. I have tried veldtschoon and can speak highly of them, but they slip on grass. A Canadian friend advises moccasins, and certainly in theory they appear to be most suitable. For soft ground or swamp I would prefer field boots, but on all other kinds of country they are at a dis-

advantage compared with the types mentioned above, and they are heavy. To a man who has always been accustomed to walk and shoot in leather boots of the usual heavy sporting type, a sudden change to the light types of foot gear I have indicated may be inconvenient. The only alternative, then, to attain the desired degree of noiselessness when approaching game is to devise some sort of sole or golosh which can be slipped on. This would certainly be quicker than the change into rope soles practised by the elephant hunter before mentioned. I should think that an intelligent bootmaker could turn out something of the nature of a snow-boot, or better still, a felt sole with toe-cap to strap on, which would meet the case. Failing that I would suggest a supply of very large and thick socks to pull over the boot, or even a strip of calico to be wound round. Leggings have been dealt with under clothing.

It only remains to state that a material as leather, which make a noise on impact with twigs and grass, and which is apt to chafe at the ankles, is undesirable.

Mosquito Net.—A tent is a quite unnecessary adjunct to a short hunting trip in the dry season in Africa, but a mosquito net is essential, and the arrangement detailed below gives one the advantage of a mosquito-proof room whose weight as a load is under 5 lbs. I had a net made by Silver and Edgington, of Cornhill, to fit inside their small size double-roofed tents. Its dimensions are: length, 7 ft.; height, 6½ ft.; breadth, 6½ ft.; the side is vertical for a height of 2 feet and is edged with linen for 6 inches up round the foot. It has rings and cord at each corner, and it is unnecessary to carry pegs. At one end the two-foot vertical side is double. The outside layer is attached down the vertical seam at one side and is free at the other, and the inner layer is attached the opposite way, so as to form a sort of trap tunnel running the whole length of the end of the tent, viz., 6½ feet. No mosquito has ever got through this, and though it may be slightly awkward to enter, yet even a "boy" cannot leave the trap open. The mesh is 16 to the inch. I would advise, however, that in the construction of a net for a similar purpose all these dimensions (except the mesh) be exceeded, specially the vertical side one, but I may remark that even when made of the size I have detailed it forms a most convenient fly-proof shelter to do writing or microscope work in when in one's bare camp. On reaching the proposed camping ground my boys observe the following routine: Grass or palm leaves are laid on the ground and the machilla cover (a piece of green canvas of the same size as the floor area of the net) is laid on the top. It improves matters to lay down two logs at one side under the canvas to keep the grass between them heaped up, and on this part, but above the canvas, the bed blankets are laid. The food box is now inverted on the canvas to form a table and the net is spread over all and tied to trees or poles, and if it is intended to occupy the camp during any part of the day, a grass or leaf roof is built over all. The net is well stretched out, the strings pegged to sticks and the linen border is tucked under the canvas floor. I do not take much trouble to camp away from mosquito haunts, as one spends almost all one's time in camp, specially in the evening, under the net. Having dinner inside is simple. One boy sits inside the net at one end of the trap and another boy sits outside at the other end, and they pass the viands to each other along the tunnel. The floor, one sits on it, of course, is clean (being canvas) and soft, and it is better not to wear boots. If one stays in camp during the day the net comes in as an effectual barrier against the onslaughts of "hippo" flies and the numerous other winged torments with which Africa has been so liberally endowed, and when not set up packs into a pillow slip, and can be used as a machilla cushion.

This arrangement does, I know, sound very complicated, but is not so in reality, and the dullest "boy" will set it up correctly, having once been shown the way, and as regards a bed, anybody who has tried a grass or palm-leaf one, made by a native, knows how favourably it compares with the camp pattern of English make.

Sterilisation of Water.—The following method is easy to carry out and is always available. It has been used by myself and every member of our party for two seasons, and to its faithful performance I largely attribute our entire freedom from dysentery.

It is specially important to attend carefully to the sterilisation of water during a shooting trip. One is not a free agent as regards choice of water supply, and has usually to take it from the same place as the game go to drink. Such water is often polluted in the extreme.

I carry water with me each day in two canvas bags, a sufficient quantity to do all that day and the following morning, and it is prepared as follows:—

At night after dinner water is put in the largest pan or in an iron drum, if one is carried. In this it is boiled for half an hour. If there is time the sediment is allowed to settle, but in any case it is passed that night, whether it is still warm or not, through a small Berkefeld filter into the canvas water-bottles, which are hung up in a draught and are cool by the morning. By having four bottles, two can be used each day and no excuse given to the boys to dodge the process. Tea should, however, be drunk in place of water when possible, not that the tea is more or even as sterile as water prepared by the above process, but it is more refreshing and does not conduce to the consumption of such a volume of fluid. If the water is ammoniacal, as it so often is in rhino country or where there is much elephant dung about, it requires a lot of boiling, add a pinch of alum or some permanganate of potash and baking powder, and it should, after these have been added and the boiling is finished, be strained through calico before being run into the filter. The awful decoction produced by the rotting of leaves in an old water-hole should have some alum added and some time allowed to elapse before the less inky upper layers are decanted off to be boiled and filtered. I do not advise, however, the indiscriminate use of alum as practised by many sportsmen and recommended by most books. Its action is purely mechanical. It tastes the water and it does not improve digestion. The rule to go on is, "sterilise the water by boiling and get the sediment out and complete the sterilisation with the filter." The white milky appearance seen in many samples of upland plain or "dambo" water is almost

impossible to eradicate. It will not precipitate and passes through a filter at least to a small extent. Treated by boiling and filtration, the water is quite safe, the white matter remaining being a fine clay in suspension, which is harmless.

Boys are easily trained to carry out this process, but it is well to have the boiling water brought for inspection every night, and any special treatment of the water must, of course, be supervised.

Machilla, Drugs, &c.—My somewhat scanty list of drugs is, I think, justified, when it is considered that a man does not go on short shooting trips when unwell. If he takes sufficient material with him to ward off malaria and to regulate his bowels, and is provided with a hammock to sleep in should it rain and to travel in should anything happen, the only contingency he cannot make adequate provision for is a serious accident. It is chiefly on this account that I would insist on a hammock, or rather machilla, being taken. He will be alone and he will have to render first aid to himself, and if his injury results from an unfortunate encounter with one of the larger pachyderms or carnivoræ will be very lucky if he is able to treat primary symptoms with the hypodermic remedies at his disposal, to get his boy to put on temporary dressings, and to survive a journey in his machilla to the nearest white man. If two or more men shoot together, they can arrange a little surgical equipment of their own, but these notes have been penned for the perusal of the sportsman who prefers to be untrammelled by other people's arrangements and do his hunting alone.

In conclusion, I wish to point out that in writing the above there has been no attempt to recommend anything which is not essential. The chase is the primary consideration and its most valuable adjunct is health and mobility. At the same time non-observation of simple rules for the prevention of disease will certainly meet its due reward. Even the most experienced sportsman is liable to be severely or even fatally injured, that is an accident; but the contraction of malaria, blackwater or dysentery during or after a shoot is by no means likely to be an unpreventible occurrence and can be avoided by taking care. The cheapness of the kit specified will not appeal to the "sporting outfitter." I have made no attempt to recommend anything for cheapness sake, and would advise any one willing to spend money on a sporting outfit for Africa to put it in rifles. It has never paid anyone to economise in that direction.

IMPACTION OF THE BOWELS WITH INFLAMMATION AND PERITYPHLITIS.

By Major G. H. Fink, M.R.C.S., L.S.A.(Lond.), I.M.S. (Retd.).

Impaction of the bowels with inflammation and perityphlitis terminating in suppuration and abscess around the cæcum and appendix is a complaint which is by no means uncommon in Europe as well as in India; but it requires the utmost care in the treatment from the very commencement to prevent suppuration and an abscess forming, and such a happy termination is by no means rare in the annals of medicine.

Etiology or Cause.—(*a*) Insufficient mastication or bolting of food, due to bad teeth or an edentulous condition; (*b*) indulgence in a too free meat diet with unsuitable articles of food of a highly spiced character; (*c*) insufficient rest in a semi-recumbent position after meals; (*d*) loss of peristaltic action of the bowels through loss of nervous control produced by too long and late hours, irregularity in meals, and want of proper rest or sleep at night; (*e*) defective action of the ileo-cæcal valve and the glands of the intestines and vermiform appendix which are found in and around this neighbourhood, which I drew attention to some years ago in my article in the *Indian Medical Record* of July 16th, 1896, on "Typhoid Fever Immunisation, and the Manner of the God of the Land"; (*f*) sudden chills of the abdominal organs, particularly the liver, which fails to secrete bile in proper quantity and quality, which aids in the mechanical process of digestion, the saponifying of fats for the lubricating of this part of the bowels where the bile-duct opens, as well as for the prevention of the decomposition of the food; (*g*) insufficient attention to the proper action of the bowels daily; (*h*) tight-lacing and clothing, which hinder the normal functions of the abdominal region and organs.

Symptoms.—Nausea or probably vomiting, followed by difficulty in passing stools; pain in the abdomen, chiefly in the region of the cæcum and ileo-cæcal orifice, which increases the difficulty and strain, tenderness of the belly, followed by a high temperature, which gradually increases with the persistent constipation; headache follows; thirst; dry tongue which furs rapidly; bad odour in breath, which gets worse as the bowels cease to act properly, and the tongue remains dirty.

The abdomen gradually becomes hard like a board, and there are slight colicky pains sometimes, which are relieved by the drawing up of the knees towards the chin. Exhaustion follows the pain, and the skin becomes dry; thirst is increased; the pulse is quick and inclined to be wiry; the respiration short and quick.

Prognosis.—Always grave—in fact, there is grave danger.

Treatment.—Absolute rest in bed.

The bowels should be relieved immediately by giving a full dose of castor-oil in hot milk and a little brandy to prevent exhaustion which sets in rapidly in some cases after a purgative is administered. If necessary, the castor-oil should be repeated a day or two after in half the original dose, provided the patient is seen soon after the attack.

Apply large linseed meal poultices with a little mustard in them over the whole surface of the abdomen in case of a chill being the additional cause.

As a rule, sleep is hard to procure, owing to the pain and feverish condition, when a hypodermic injection of morphia or internal administration of $\frac{1}{4}$ gr. to gr.ss. of morphia powder according to age and peculiar idiosyncrasies of the patient. Morphia, as a rule, is borne well, for it does not interfere with the action of the bowels, and there is great tolerance for this drug in such cases. I know of one case in particular which took as much as one grain of morphia twice a day

(mid-day and at bedtime) internally for a week, until all acute symptoms passed off, and sleep was established with most excellent results. Morphia in such cases not only gives rest and sleep but relieves pain; gives the bowels rest after the severe strain; cleans the tongue rapidly; produces free perspiration; reduces the fever and the pulse; promotes the natural action of the organs as well as improves digestion and the appetite. No sooner the fever is lowered and there is this improvement in the acute symptoms, give quinine, 5 grs., every evening at 6 a.m. to keep down the temperature and combat any malarial tendency present; in India continue the quinine for a few days longer until the temperature is normal. If there should be subnormal temperature, discontinue quinine. The height of the temperature depends a great deal upon the length of time that there has been impaction of the bowel with constipation, which in some cases has been known to last over a week before being relieved, when there is great tendency for erosion of the mucous membrane to set in, followed by a severe burning sensation all along the cæcal region, which in some cases might terminate in ulceration of the bowel, perityphlitis and abscess.

Resorcin, 5 to 30 grs., should be given internally daily to act as an antiseptic on the stools, particularly where the liver has struck work and is acting improperly.

Hot fomentations with a few drops of turpentine sprinkled over the flannel should be applied over the lower part of the abdomen, especially along the lumbar, umbilical, and hypogastric regions every third or fourth hour, as it is very soothing and often prevents suppuration occurring. After the fomentations, gentle rubbing with olive oil over the fomented parts is also very grateful to the patient.

Diet.—Everything given must be cold, viz., cold milk, barley water, Brand's essence of chicken, chicken broth; linseed tea with ice in it should be given at regular intervals to the patient to support his strength every second hour. Small lumps of ice to suck to relieve thirst.

Later on, when this diet is well borne and there are no untoward symptoms, improve the diet gradually to soups, fish, "pishpash," porridge and milk, chicken stew, and so on, feeling one's way very gradually from day to day. In order to aid digestion give liquor pepticus, ʒi. to ʒii. in water, with two teaspoonfuls of brandy in it, after each meal. Later on, a glass of champagne with the mid-day meal, and one with the evening meal, which should not be later than 7 p.m., as it enables the patient to pick up strength rapidly and improves the appetite.

Tonic.—℞. Tincturæ Nucis Vomicæ, ♏ iii.-v., t.d.s., in water.

Regulate the bowels throughout the after-treatment with occasional doses of castor-oil, or a warm enema with a few grains of boracic acid in it as an antiseptic.

Clothing.—Flannels. Change the clothes and bed-clothes if damp with perspiration to prevent chills.

Some patients find it difficult to use the bed-pan and cannot micturate in bed while lying down, in which case great care must be exercised in allowing the use of the commode, when a nurse or attendant should always be present to help the patient in and out of bed, since the act of sitting up is very exhausting, and a bottle of smelling-salts should be kept near at hand for the patient should it be needed.

Hygiene.—The room requires free ventilation twice a day, and all pans, &c., should be kept scrupulously clean.

As a rule it is not safe to allow the patient carriage exercise too early. A bath-chair is the best at first, and this must be prescribed carefully in the beginning until his strength improves, and not until six weeks have passed off from the commencement of the attack is the patient fit to be allowed to get about by himself, and then with aid, when a change to the country or seaside should be recommended.

For some months after, every care in the diet is necessary, and the bowels need regulating. Nothing in my opinion is so useful as castor-oil, for it lubricates the passage and removes all irritation.

Salts and mineral waters are in my opinion most dangerous, as they inflate the bowels by attracting watery constituents, which to an injured surface is the very worst thing to administer.

Painting the skin of the part which has been affected with Lin. iodine once or twice a week is very useful in reducing the hard brawny condition which is left after averting suppuration, for it restores the part to its natural and supple condition.

Plenty of ripe fruit is recommended during convalescence.

"Archiv. Gen. de Med.," June 20, 1905.

Leprosy. E. Weil.

With age the bacilli become less resistant as the lesions involute. They are easily decolourised by acids, do not stain by Gram and sometimes take blue stains; so that the test of any possible culture must be the presence of bacilli with staining of young bacilli.

Lumbar puncture was made in five cases. One case was tubercular leprosy, one of nerve (anæsthetics), and three of mixed type. One case was examined during an accentuation of the eruption with fever. These cases confirm the two cases previously examined by Jeanselme. There were neither bacilli nor lymphocytosis.

T. P. B.

"Gazette des Hopitaux," June 15, 1905.

Botryomycetes of the Foot. Barres.

A native was admitted to hospital at Hanoi with a sore on the plantar surface of the foot, which constantly bled; there was little pain. It was originally due to a wound from a splinter of bambo; the patient continued to go barefooted, though the wound continued to discharge slightly. The edges were thickened and corneous, in the centre was flat granular swelling; on raising this a fairly large pedicle was seen; the depression contained thick yellow pus. Curetting and the application of chloride of zinc 1 in 10 caused the wound to heal in a week. Cultures showed pure staphylococci, which were also found in section of the growth. Plantar warts, the author objects to the term botryomycetes, are very rare even in barefoot natives.

T. P. B.

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THE

Journal of Tropical Medicine

August 1, 1905.

BRITISH MEDICAL ASSOCIATION ANNUAL MEETING, LEICESTER, 1905.

Section of Tropical Medicine.

Abstract of Proceedings.

President: Rubert Wm. Boyce, M.B., F.R.S., Liverpool. *Vice-Presidents:* Andrew Duncan, M.D., London; Fleming Mant Sandwith, M.D., F.R.C.P., London. *Honorary Secretaries:* George Aylwin Clarkson, F.R.C.S., 173, London Road, Leicester; John M. Hendrie Macleod, M.D., 11, Harley Street, W.

OPENING ADDRESS

BY

Professor Rubert Wm. Boyce, M.B., F.R.S.

The Year's Progress in Tropical Medicine.

During the year progress has been made in the departments of Tropical Medicine which formed the subject of discussion at the meeting of the Section in 1904, namely, the prophylaxis of malaria, trypanosomiasis, and in our knowledge of the Leishman-Donovan bodies. Colonel Bruce then expressed the belief that trypanosoma fever was probably only an early stage of sleeping sickness, and extended experiments serve to confirm this view. Experimental enquiry by Thomas demonstrates the remarkable arsenite action in the lower animals of an atoxyl-aniline arsenic compound, and it now remains to prove the efficacy of these drugs in cases of sleeping sickness in man. Our knowledge of the new parasite associated with the names of Leishman, Donovan, Marchand and Wright has been increased by Rogers, Leishman, Donovan, Christophers, Balfour and others. Bentley has thrown further light on protozoology in disease; James and Patton have described leucocytozoa in certain mammals; Balfour and Christophers have found hæmogregarines in the red cells of certain mammals. The tick which Christy sent from Uganda to England has been identified as the *Ornithodoros moubata.* Ross and Milne made the interesting discovery that spirochætæ were present in the blood of cases of tick-fever. Dutton and Todd succeeded in infecting the monkey and rat by means of ticks infected by feeding upon the blood of cases of tick-fever in man. The same observers declare also that clinically tick-fever and relapsing fever in man are identical. The elucidation of the manner of infection in Malta fever has been advanced by Bruce and others.

One of the most remarkable features of advance in Tropical Medicine has been the fact that the botanist, the zoologist, the dipterologist, the helminthologist and the protozoologist have all been called in to help in the investigation of disease, and each and all are now to be found in every well-organised tropical medical laboratory. Medicine owes a great debt to active zoologists like Loos, of Cairo, and Shipley in this country, but as yet we do not give them sufficient encouragement. We require their co-operation, for there are vast fields awaiting their investigations. In the public services the medical officers have recently shown an activity and interest in investigation which is highly encouraging, and much good work has been and is being done by them.

Success in the newer methods of malaria prophylaxis has been reported from Klang and Port

Swettenham in the Federated Malay States by Dr. Malcolm Watson. Atkinson shows that in Hong Kong cases of malaria have been materially reduced by following antimalarial measures, and from many other towns and countries satisfactory reports in the same direction are being continually received.

The following papers were read at the meeting :—

Wednesday, July 26, 1905.

(1) The Nature of Human Tick-Fever in the Eastern Part of the Congo Free State, with Notes on the Distribution and Bionomics of the Tick. By J. Everett Dutton, M.B.(Vict.), late Walter Myers Fellow of the Liverpool School of Tropical Medicine, and John L. Todd, M.D.(McGill).

(2) On the Pathogenic Ticks Concerned in the Distribution of Disease in Man, with Special Reference to the Differential Characters in *Ornithodoros moubata*. By R. Newstead, A.L.S., Lecturer in Economic Entomology and Parasitology, Liverpool School of Tropical Medicine.

The following joined in the discussion: Dr. L. Westerna Sambon, Major Ronald Ross, C.B., Dr. J. C. Graham, Dr. Albert J. Chalmers, and Mr. J. Cantlie.

(3) Bruhl's Disease, with Special Reference to the Blood Changes Found, and Connection with the Leishman-Donovan Bodies. By P. W. Bassett-Smith, Fleet-Surgeon R.N., Haslar.

(4) Notes on Two Cases of Febrile Tropical Splenomegaly (Kala-Azar), and a Suggestion. By Sir Patrick Manson, K.C.M.G., F.R.S.

(5) Guinea-worm and its Hosts. By W. M. Graham, M.B.

In the discussion, Dr. W. C. Brown, Dr. A. T. Chalmers, Dr. F. M. Sandwith, Dr. L. W. Sambon, Dr. W. T. Prout, C.M.G., Dr. J. Tertius Clarke, Dr. C. F. Harford, Dr. Schilling, Mr. R. Newstead, and Dr. D. E. Anderson took part.

Thursday, July 27.

(1) Tropical Diseases of the Skin. The discussion was opened by J. M. H. MacLeod, M.D., M.R.C.P., Lecturer on Diseases of the Skin, London School of Tropical Medicine.

(2) Pinta. By F. M. Sandwith, M.D., F.R.C.P., Consulting Physician to Kasr-el-Ainy Hospital, Cairo; Lecturer, London School of Tropical Medicine.

(3) Pellagra. By L. W. Sambon, M.D.(Naples), Lecturer, London School of Tropical Medicine.

(4) Notes on Framboesia Tropica. By J. Campbell Graham, M.D., Deli, Sumatra.

(5) Notes on Pian (Yaws) in French Indo-China. By M. E. Jeanselme, M.D., Professeur Agrégé à la Faculté de Medécine de Paris. (This paper was translated and abridged by Dr. F. M. Sandwith.)

(6) A Communication on a Tropical Skin Disease. By John Bell, M.R.C.S., L.R.C.P., Superintendent, Government Civil Hospital, Hong Kong.

(7) Involvement of the Scalp in Leprosy. By George Pernet, M.R.C.S., L.R.C.P., Assistant to the Skin Department, University College Hospital, London.

(8) The following papers were communicated by Dr. Aldo Castellani, Colombo, Ceylon :—

(*a*) On the Presence of Spirochætes in Two Cases of Ulcerated Parangi (Yaws).

(*b*) Observations on "Dhobie Itch," and other Tropical Tricophytic Diseases.

(*c*) Tropical Forms of Pityriasis Versicolor.

(9) Leprosy, with demonstration of coloured slides. By Dr. Karl Grossman.

The following took part in the discussions : Professor Boyce, F.R.S., Dr. Radcliffe Crocker, Dr. F. M. Sandwith, Major G. H. Fink, and Mr. J. Cantlie.

Friday, July 28.

(1) Sprue. By James Cantlie, M.B., F.R.C.S., Lecturer, London School of Tropical Medicine.

(2) Hill Diarrhœa. By Lieut.-Colonel Andrew Duncan, I.M.S., M.D., F.R.C.S.

The following took part in the discussion: Dr. L. W. Sambon, Dr. David J. Galloway, Dr. John Haddon, Dr. A. J. Chalmers, Dr. J. C. Graham, Dr. F. O. Stedman, Dr. C. F. Harford, Major Fink, and Dr. John Hutson.

(3) On the Present Theories of the Cause of Beri-beri. By J. Tertius Clarke, M.R.C.S., L.R.C.P.

(2) The Several Theories Advanced as a Cause of Beri-beri. By Hamilton Wright, M.D.(McGill), late Director, Institute Medical Research, Federated Malay States.

(3) Note on Two Cases of Beri-beri Paresis Treated with Strychinine Injections. By R. Tanner Hewlett, M.D., M.R.C.P., Professor of General Pathology and Bacteriology, King's College, London; Lecturer in Bacteriology, London School of Tropical Medicine.

The following took part in the discussion on Beri-beri: Dr. F. O. Stedman, Dr. D. J. Galloway, Mr. J. Cantlie, Dr. J. C. Graham, Dr. L. W. Sambon, Professor Boyce, and Dr. W. L. Strain.

(4) Diarrhœa from Flagellates. By Dr. Aldo Castellani, Colombo, Ceylon.

(5) Blood Counts in Acute Hepatitis and Amœbic Abscess of the Liver, with Further Experience of the Relationship of the *Amœba dysenterica* to Tropical Liver Abscess. By Leonard Rogers, M.D., Capt. I.M.S.

(8) Seven Recent Cases of Liver Abscess. By James Cantlie, M.B., F.R.C.S., Lecturer in Surgery, London School of Tropical Medicine.

(9) Note on the Method of Taking Quinine in the Prophylaxis of Malaria. By St. George Gray, M.B., Sierra Leone.

(10) Two Further Cases of Snake-bite Successfully Treated by Local Applications of Permanganate of Potash, with Suggestions for Extension of its Use. By Leonard Rogers, M.D., Capt. I.M.S.

(11) The Mosquito-Malarial Theory and Malarial Prophylaxis from the Latent Phase. By Major G. H. Fink, I.M.S.

(12) Malarial Fever in British Central Africa. H. Hearsey, M.D., Principal Medical Officer, British Central Africa.

(13) Note on a Peculiar Schistosomum Egg. By S. R. Christophers, M.B.(Vict.), I.M.S., and J. W. W. Stephens, M.D.(Cantab.), Liverpool School of Tropical Medicine.

ENTERTAINMENT AT THE WELLCOME CLUB AND INSTITUTE.

On Saturday, July 15th, the occasion of Burroughs, Wellcome & Co.'s Quarter Century Commemoration, the members of the Society of Chemical Industry, and a number of medical, scientific and other distinguished guests, paid a visit to the firm's works at Dartford, Kent, and to the Wellcome Club and Institute, founded for the benefit of the employees. The guests were conveyed by three special trains, two from Charing Cross and one from Cannon Street. Upon arrival at the station an alarm of fire was given from the platform by means of a special button, and the proceedings commenced with a smart display of fire drill by the firm's private brigade. The guests numbered about 2,000, and were entertained to luncheon in a large marquee erected in the Club grounds.

After the loyal toasts, Mr. Wellcome proposed the "Society of Chemical Industry."

Dr. W. H. Nicholls, the President, replied, and referred to the wonderful organisation shown in the firm's works and in the arrangements for the reception and entertainment of the visitors during the day.

Mr. Wellcome proposed "The Employees," and presented them with a silver gilt cup in remembrance of the fact that the Wellcome Cricket Club had won the championship of the Chemists' and Druggists' Cricket League for five years in succession.

Mr. R. Clay Sudlow, General Manager, replied.

Professor Armstrong proposed the toast of "Burroughs, Wellcome & Co., and referred to the fact that every important expedition which had started from British or foreign shores during recent years had been equipped by the firm.

After Mr. Wellcome had replied, "Medicine and Pharmacy" was proposed by Mr. A. Gordon Salamon, the toast being coupled with the names of Sir James Dick, Hon. Surgeon to H.M. the King, and Mr. R. A. Robinson, L.C.C. (President of the Pharmaceutical Society of Great Britain).

After luncheon the programme of entertainments was continued with athletic sports, maypole dances, garland and sword drill by employees, open-air concert, fireworks, illuminations, &c.

The prizes were distributed by Lady Manson, and Sir Patrick Manson speaking at one of the other functions, said that he felt that to-day had been an object-lesson to all of them not only of the heartfelt interest Mr. Wellcome had in the welfare of his employees, but of the wonderful organisation of the firm as exemplified in the forethought which had provided so bountifully for the comfort and pleasure of everyone throughout the day, and by the precision with which a wonderful programme had been carried through.

If he were asked to name the keynote of Mr. Wellcome's success, he would answer "simplicity," and having in mind and in memory the old-fashioned prescription, in which it was thought necessary to have twenty-five ingredients, he would like to express his thanks and that of other members of the medical profession to Mr. Wellcome for the marvellous way in which he had helped them in their work.

Especially in his own particular sphere of interest, namely, tropical medicine, he was in a position to know and to appreciate the debt of gratitude they owed Mr. Wellcome for his liberality in initiating and supporting research work. The results had already been most valuable, and the promise was greater still.

Review.

Precis de Pathologie Exotique. By A. Le Dantec. Paris: Doin. 12 francs.

This, the second edition, is not only replete with the latest information, but embraces every feature relating to tropical diseases. Its wealth of detail, clearness, and elegance of expression render the perusal of the work as pleasant as it is profitable. The description of the tropical diseases themselves is supplemented by suggestions bearing on numerous obscure points in pathology.

The author delivers a weighty judgment on the question of typhoid and paratyphoid. Anti-typhoid vaccination in subjects from the ages of 20 to 25 reduces the morbility from 77 to 27 per 100; in those between the ages of 25 to 30 the rate is reduced from 51 to 27; in patients over 30, it is detrimental. Many practical points of treatment are given; amongst others, when the supply of ice is scant or absent, the patient can be wrapped in a sheet wrung out of water at 104° F. and fanned (by an electric fan), by which the temperature is reduced; the procedure is repeated two or three times a day.

The views of British medical services in the Tropics are not less instructive than complimentary; the figures quoted in point are of interest, and show that with care great reduction in the death-rate in expeditions, may be effected.

		Proportion of Deaths from Diseases per 1,000.
Ashanti, 1873 ...	Europeans ...	18·2
	Natives ...	17·7
Dahomey, 1894...	Europeans ...	121·
	Natives ...	23·
Madagascar, 1895	Europeans ...	334·
	Colonials ...	154·

Of Peruvian warts, (Oroya fever), not only is the question of its pathology discussed, but the three clinical varieties are described: the chronic variety; the acute variety (Oroya fever) which is fatal before the appearance of the eruption; thirdly, the more chronic form where the eruption is the first symptom.

The whole question of yaws is summed up by stating that it is useless to discuss the relation between it and syphilis until more is known about extra-genital syphilis and malignant tropical syphilis.

The description of trypano-somas and piroplasmas is a marvel of lucidity, the whole question of protozoal diseases and tropical ulcers is expounded.

Considering the wealth of material the book contains in some thirteen hundred pages, it is a question

if it would not be desirable to publish separately the part dealing with climate and colonisation, the diseases due to cold, and the question of marine sanitation, perhaps also leprosy, because, though it is most common in the Tropics, yet its pathology is fully discussed in pathological text-books.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Geographie Medicale," Paris, 1905.

Medical Geography. By Dr. Emile Laurent. 830 pages.

Information on medical geography is to found in abundance in scientific works, but it is unfortunately scattered amongst a host of essays, memoirs and reports, &c., whilst not a single collective work on the subject is in existence.

Dr. Emile Laurent states in his preface that he has endeavoured to meet this want and "to supply in as concise and as complete a form as possible some exact medical information about every part of the world." He is to be congratulated on having successfully accomplished his object in view. The book needs only to be seen to be appreciated, and will probably shortly be found in the libraries of most consulting physicians and travellers.

As it is difficult to make extracts from a work of this size, a brief enumeration of its divisions is here given:—

Part I. deals with climatology and nosology generally.

Part II. is given up to the medical geography of France.

Part III. describes the medical geography of the rest of Europe.

Parts IV. to VII. deal severally with the medical geography of Asia, Oceania, Africa and America.

J. E. N.

Medical Congress, Wiesbaden, April, 1905.

Sleeping Sickness.

Lorand considers the condition is typically one of chronic cachexia; rarely there is an advanced myxœdematous condition with changes in the heart and nervous centres. The disease, like myxœdema, is often preceded by an infectious disease, trypanosomiasis, which, like other infectious diseases, presents symptoms of excessive thyroid action, high temperature, tachycardia, sweating, localised œdema, sleeping sickness, like myxœdema, shows itself a considerable time after the preceding infectious disease. Lorand recently had a case in an officer from the Congo benefitted by thyroid, his cerebro-spinal fluid showed trypanosomes.

T. P. B.

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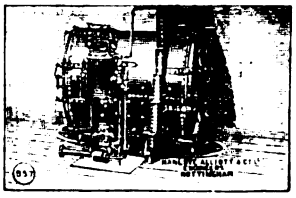
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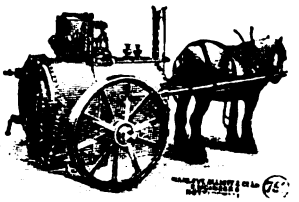


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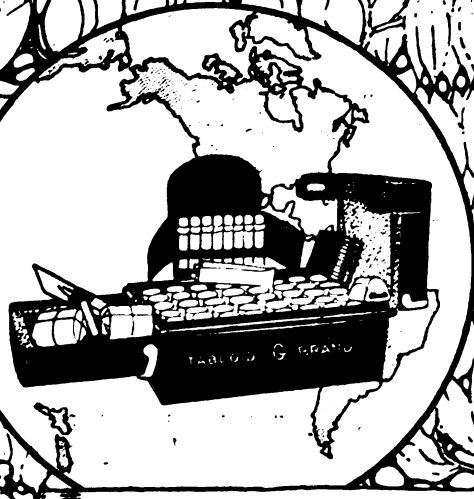
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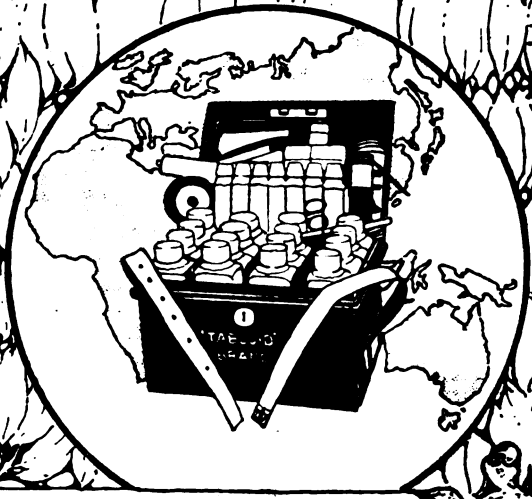
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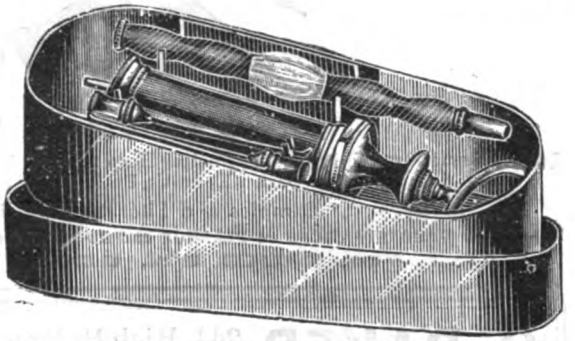
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By ANDREW BALFOUR, M.D., B.Sc., M.R.C.P.(Edin.), D.P.H.(Camb.).

Director, Wellcome Research Laboratories, Gordon College, Khartoum.

WHILE carrying out work in connection with trypanosomiasis I have had occasion to make numerous examinations of the blood of the jerboa or desert rat (*Jaculus jaculus*, or *J. gordoni*, as I believe it has been renamed) (fig. 1). In the first blood examined I was surprised to see that a large proportion of the red blood corpuscles harboured an unpigmented and non-motile parasite. In the stained specimen it was at once apparent that we were dealing with some kind of trophozoite. Twenty-nine jerboas have up to the



FIG. 1.

present been examined, and in all of them, with the exception of two very young animals, this parasite has been found. Specimens were sent to Professor Laveran, who at once declared the parasite to be a hæmogregarine, and has kindly informed me that the discovery is one of much interest. He has further urged me to publish some notes upon its life-history, although my observations are yet far from complete.

THE APPEARANCE OF THE PARASITE.

The trophozoite in the fresh blood appears as a pale, hyaline, homogeneous body, slightly curved and with rounded ends (sausage-shaped), lying either apparently free or in the remains of a red blood corpuscle. The latter may be represented only by a bow uniting the two poles of the parasite, just as it is sometimes seen in the case of malarial crescents. The free forms, I believe, owe their condition to a total destruction or absorption of the substance of the erythrocytes which once contained them. As stated, the parasite is non-pigmented and non-motile, and I have found it to be rather resistant, remaining to all appearance unchanged in sterile citrated blood for a period of seventy-two hours, both when kept at room temperature (about 36° C) and at 22° C. It is to be noted, however, that it altered somewhat in its staining reactions. As a rule, it measures from 5·6 to 7 μ in length, and from 1·4 to 2·8 μ in breadth. The number present has been found to vary considerably. There may be six or seven, or even more present in each microscopic field (Leitz oc. 4, oil imm. $\frac{1}{12}$th), or only a few may be found in the whole blood smear.

STAINING THE PARASITE.

On staining by the Leishman-Romanowsky method, in exactly the same way as for malaria protozoa, the structure of the parasite becomes at once apparent and the shape, as described above, well defined. A large oval nucleus, constituting, as a rule, about one-third of the organism, is seen to be present, situated generally in the centre of the parasite and stretching right across it, so that there is a deep blue staining area (the nucleus) in the middle, and a faintly staining blue area with a rounded end on either side. Occasionally, but rarely, and then usually under special conditions, spherical chromatin dots may be found in one or other of these pale polar areas. In stained preparations it is common to find that no vestige of the real blood corpuscle which originally harboured the parasite remains, but careful search will nearly always reveal one or two parasites with portions of the red-staining erythrocyte adhering to them. All that may be present is a thin, red curved line stretching from pole to pole across the slight concavity of the parasite (fig. 2). Sometimes, especially if the blood be citrated, the relation of the parasite to the blood cell which contains it is beautifully shown. A process of absorption of the cytoplasm of the red cell evidently goes on, and in a severe infection there must be a considerable destruction of erythrocytes. The animal host, however, does not seem to suffer in health. I have kept a jerboa with a considerable infection for three months in the laboratory, and it remained well and lively throughout the whole period. Two others died in captivity, exhibiting violent *ante-mortem* convulsions, and it is worth noting that these rodents do not stand handling well and must not be supplied with water.

In the peripheral blood it is customary to find all the parasites at or about the same stage of development. True, they differ somewhat in aspect. Thus it is not uncommon to find the nucleus situated at one pole, so that half the parasite stains a deep blue and the other half a very faint blue. Again, one end of the parasite may be pointed, so that the body is club-shaped. This is probably due to alteration during the preparation of the blood smears. In the heart's blood of a jerboa which died naturally I found two distinct forms, a large swollen variety (11·2 μ by 4·2 μ), in which the greatest increase had taken place in the light staining part of the protoplasm, and a form like those already described (fig. 3). It was very noticeable that the nuclei of the former, often of a triangular shape, stained a deep Romanowsky purple and frequently did not stretch wholly across the parasite, and in the large pale-staining area three or four spherical chromatin dots were often to be observed.

Professor Laveran has seen this preparation and points out that such peculiarities in morphology frequently occur. He does not regard these as special

sexual forms. At first I was inclined to consider the parasite as being allied to the halteridium of birds. I noted, however, that it was not pigmented, was not curved so much as the halteridium forms, and never exhibited the spore formation at either end as does *Halteridium danilewsky*.

Endoglobular Hæmogregarine of this Class not Found Previously in the Red Corpuscles of Mammals.

As Professor Laveran kindly pointed out to me, and as indeed was soon apparent from a study of the literature, especially Professor Minchin's treatise on the sporozoa, this parasite of jerboa closely resembles the *Hæmogregarinidæ* of cold-blooded vertebrates. This fact is of extreme interest, as I am unaware of any endoglobular parasite of this class having been described in the blood of mammals. Bentley[1] has recently produced a paper on a leucocytozoön of the dog in Assam, but I understand there is some doubt as to his parasite (also described by James[2]), which moreover affects the leucocytes. The classification of this order of parasites given by Professor Minchin is as follows:—

"Order *Hæmosporidia* (Danilewsky).

"Sub-order I. *Hæmosporea.*

"Genus i. *Lankesterella* (Labbé, 1899) for *Drepanidium* (Lankester). The hæmogregarine is not more than three-quarters the length of the blood corpuscle it inhabits.

"Genus ii. *Karyolysus* (Labbé, 1894). The hæmogregarine does not exceed the corpuscle in length.

"Genus iii. *Hæmogregarine* (Danilewsky, 1897) (syn. Danilewsky-Labbé, 1895).

"The body of the parasite when adult exceeds the corpuscle in length and is bent on itself within it in a characteristic manner like the letter V."

Now the parasite of the jerboa in question does slightly exceed the corpuscle in length, but is only slightly curved. It looks, as a rule, as if it had outgrown its corpuscle, and sometimes the remains of what has evidently been a distended and distorted corpuscle can be seen lying around it. The large swollen and bloated forms are much larger than the corpuscles which originally contained them and are found lying free. On several occasions, and especially in fresh preparations from the bone-marrow, I have noted forms slightly turned up at one end and looking like an incomplete letter V. I have not been able to demonstrate this appearance in stained specimens.

Laveran's classification, in which the genus *Hæmogregarine* is made to include *Drepanidium* and *Karyolysus*, is more simple, but whichever be adopted, it would seem that this parasite is undoubtedly a hæmogregarine, and I propose to give it the provisional name of *H. jaculi*,* though it is quite possible it may be found in other mammals. Indeed, I have recently discovered what seems to be the same parasite in the mononuclear leucocyte of the Norway rat (*Mus decumanus*) in Khartoum (fig. 4). It is probable that it exists as a leucocytozoön in the rodents, but further observations are required. I have once found free forms in smears from the splenic pulp of a Norway rat.

* Professor Laveran has recently written me to say that he has given the name of *H. balfouri* to this parasite.

Reverting to the parasite of the jerboa, a study of its life-history has further indicated its relation to the *Hæmogregarinidæ*, for I have succeeded in finding two further stages, *i.e.*:—

(1) The free, motile vermicule form.

(2) The stage of schizonts in the form of cytocysts.

In one instance only have I found the free trophozoite. I discovered two such forms in the peripheral blood of a jerboa, which showed the endoglobular trophozoite in fair numbers and which had some injections of the serum of a water-buck in connection with trypanosome work.

A Free Form of the Parasite.

This free form is in length about three times the diameter of a red blood corpuscle, is pointed at both ends, and moves very slowly through the blood, progressing by a series of contractions of its cytoplasm, the so-called "euglenoid" movements. As a result constrictions appear in the body of the parasite, as many as three having been seen present at one time. These, so to speak, run along the body of the parasite, which thereafter assumes its usual cylindrical shape and glides steadily across the field, always proceeding in one direction and with the same end in front. It pauses for greater or longer periods, undergoing various alterations in shape. If it encounters a clump of red blood corpuscles it disappears amongst them, producing only a slight agitation amongst the erythrocytes, which it pushes out of its way. Granules are visible in the posterior part of the body. No flagellum has been seen nor anything to suggest the extrusion of a gelatinous thread, as occurs in the case of some of the gregarines. I have been fortunate enough to secure a stained preparation of this free trophozoite, the appearance of which further demonstrates its resemblance to a hæmogregarine (fig. 5).

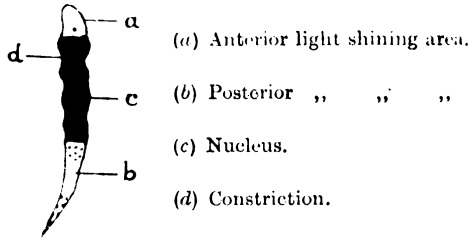


Fig. 5.—A Free Trophozoite.
(Figs. 2, 3 and 4, see Plate.)

Anteriorly there is a somewhat sharp-pointed area staining a light blue and in which close to the nucleus a chromatin dot is visible. Following this clear area comes a very lengthy, oblong, deeply stained nucleus. At one point it showed a constriction similar, no doubt, to those seen in the fresh preparation. It had been killed, fixed, and stained in the act of progression.

Behind the nucleus is a lengthy, light-staining area, terminating in a pointed extremity. This area stains a light blue with the Leishman stain and exhibits a cluster of chromatin dots, arranged in a somewhat rosette form immediately behind the nucleus. I noted a single central dot with six others arranged in a circle around it. A few similar dots, irregularly arranged, are also visible close to the posterior extremity.

Measurements :—

Total length	15·5 μ
Length of nucleus	7 μ
Length of anterior light area ...	2·8 μ
Length of posterior light area ...	5·7 μ
Greatest breadth	2·8 μ

The nucleus, it may be said, stretches completely across the body, entirely separating the anterior from the posterior moiety. The broadest part of the parasite is towards the posterior end of the nucleus. In most cases a third stage can be readily demonstrated. This is chiefly seen in the liver and kidney, organs where the circulation is slow, and will probably be found also in the bone-marrow and brain. Indeed, some smears of the bone-marrow have shown what were probably empty cytocysts. In thick smears from the liver and kidney well-defined cysts are found, the walls of which are apparently formed by the remains of cells of these organs which have been destroyed by the parasitic growth (fig. 6)

These cysts vary much in size. The largest I have noted occurred in a liver smear and measured 39·6 μ by 33·6 μ. A common dimension appears to be about 22·4 μ by 16·8 μ, but many smaller cysts occur (fig. 7).

It is usual to find some of these cytocysts empty, or at the most containing a little residual protoplasm, but a certain proportion are found to contain merozoites (fig. 8), readily recognisable by their shape and nuclei, and somewhat resembling the trophozoite stage in the blood. Their nuclei, however, are comparatively small, and in many cases the merozoite appears to be longer and more pointed at the ends than the endoglobular trophozoite.

Schizont Forms.

Early schizont forms also occur, in which the protoplasm contained within the cyst wall has not become differentiated and stains more or less uniformly. Sometimes darker-staining portions indicate the future nuclei of the merozoites. When complete division has taken place some residual protoplasm remains behind, and the whole condition is very like that which has been described by Labbé[3] in the case of *Karyolysus lacertarum*. Sections of the liver stained by the Giemsa method show all stages of the schizonts. Mitosis of the nuclei and the formation of daughter nuclei are well seen.

Appearances very like those presented during the schizogony of some of the Coccidia, notably *Adelea ovata*, are exhibited and the whole condition from the invasion of the liver cell to the bursting of the cyst and the freeing of its contents can be traced. The merozoites in a ripe cyst can be seen to be arranged side by side nearly all round the periphery of the central undifferentiated mass of protoplasm which remains as the residuum.

By what channel the hepatic cell is invaded has not as yet been determined, but it is probably through the capillaries.

The interesting appearances presented by these liver sections, which were kindly prepared for me by Mr. Richard Muir, of the Pathological Department, University of Edinburgh, and require detailed study, are further confirmation, if any were required, that this parasite of jerboas is a hæmogregarine.

Laveran[4] has pointed out that the schizont stage of these parasites in reptiles is passed in the liver, and Labbé has given much attention to this subject. I have not yet been able to decide whether dimorphism occurs, and if micro- and macromerozoites can be distinguished, but it is probable that such will be found to be the case.

Before seeing the liver sections I was under the impression that the non-sexual cycle was probably as follows: The trophozoite is set free from the erythrocyte as the travelling vermicule, which eventually penetrates a cell of the liver or kidney, and gives rise to schizonts in the form of cytocysts. In these the merozoites are formed which, after certain changes, eventually escape into the blood stream, invade red blood corpuscles and so restart the cycle of schizogony.

So far, however, one has not been able to see anything like the travelling vermicule in the liver sections. The form invading the hepatic cells looks like the trophozoite of the peripheral blood, or, at the most, one of the swollen forms already mentioned. Is it, then, possible that the travelling vermicule plays no part in this cycle? This is possibly so, or again, as Labbé asserts, for *Lankesterella* and *Karyolysus*, an isogamic conjugation may take place between two of these free forms, and it may be the zygote so formed which can be seen penetrating the liver cells. Many, however, disbelieve Labbé's conclusions, which have not been confirmed by the observations of Hintze[5] on *Lankesterella*, so possibly the freed trophozoite directly invades the liver cell and becomes the schizont, while the free vermicule is intended to play a part in an extracorporeal sexual cycle. This leads us to consider the habits of the jerboa and the parasites which it harbours.

The rodent is a nocturnal animal, living in holes in the desert, remaining invisible throughout the day, but found hopping about in the evening and on moonlight nights. It exists far from any water, which it does not seem to require, and its food probably consists of the minute seeds of the small plants which contrive to exist in sandy wastes. The animal is easily caught in traps baited with millet.

Both fleas and mites are found on the jerboa. The species of *Siphanoptera* present has not been determined, but I have dissected and examined the internal organs of engorged fleas taken from infected animals. My observations have been limited, but, so far, though I have found unaltered parasites in the blood from the stomach of a flea, nothing has been seen which suggests that a stage is passed in that insect. Further dissections are required. Some blood containing endoglobular trophozoites was placed in the acid citrate solution devised by Rogers[6] to simulate the conditions present in an insect's stomach. Though kept in this medium for over forty-eight hours at room temperature, no change took place in the parasites, save that their cytoplasm became more granular.

I have not been able to examine the mites, which are extremely minute and not very often present. As the jerboa is nocturnal I thought it well to chloroform one during the night, and at once examine its blood and organs. I failed to find the vermicule form, or anything but the free and endoglobular trophozoites.

It should be said that to the naked eye there is no morbid appearance presented by any of the viscera. The spleen seems never to be enlarged, and, as far as can be told, the liver does not appear abnormal.

Further, it may be stated that numerous free forms (trophozoites or merozoites) are usually present in smears made from the liver, kidney and bone-marrow, and to a less extent in those from the spleen.

Professor Laveran writes me to say that he has now found the same parasite in jerboas from Tunis, so that, no doubt, much information will soon be forthcoming regarding this interesting parasite of mammals. It will be of special interest to determine if it really exists as a leucocytozöon in *Mus decumanus*, or whether in the case cited the mononuclear leucocytes were merely taking on a phagocytic action, or whether the parasite found in the Norway rat is another distinct variety.

In concluding this paper, I would record my sincere thanks to Professor Laveran for his kind interest and advice; my indebtedness to Dr. Beam, chemist to the laboratories, for the photomicrographs; to Mr. Muir for the drawing of the vermicule, and to my laboratory assistant, Mr. Friedrichs, for his useful aid in the work.

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"Archive Gen. de Med.," July 4, 1905.

Sleeping Sickness. Sicardo Moutier.

At the Soc. Med. des Hopitaux, June 30th, a man of 38 was shown who had contracted trypanosomiasis two years before in Gambia, when he had headache, lassitude and general debility. The second stage of the disease was characterised by epileptiform crises with partial contractions, followed by torpor. The third period commenced eight months ago with deep sleep lasting eighteen to twenty-four out of the twenty-four. Lastly, there is fever, loss of control over bladder and rectum, with commencing bedsore. Lumbar puncture showed abundant lymphocytes, and the signs of marked meningeal infection. The history and physical signs negative the diagnosis of general paralysis, tumour, or syphilitic tubercular or malarial meningitis. Trypanosomes have not been found. Inoculations are too recent to show results.

T. P. B.

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THE

Journal of Tropical Medicine

AUGUST 15, 1905.

BRITISH MEDICAL ASSOCIATION ANNUAL MEETING, LEICESTER, 1905.

SECTION OF TROPICAL MEDICINE.

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THE NATURE OF HUMAN TICK FEVER IN THE EASTERN PART OF THE CONGO FREE STATE, WITH NOTES ON THE DISTRIBUTION AND BIONOMICS OF THE TICK.

By J. Everett Dutton, M.B.(Vict.), late Walter Myers Fellow of the Liverpool School of Tropical Medicine, and John L. Todd, M.D.(McGill).

Dutton and Todd, on November 26th, 1904, first intimated that a spirillum was the patho-

genic agent in the human tick fever which occurs in the Oriental province of the Congo Free State, and that they had been able to infect monkeys with spirilla through the bites of ticks. Natives in this part of Africa have always dreaded the bite of the tick, *Ornithodoros moubata*, and but little attention was paid to their statements until quite lately. Dutton and Todd have been able to show that tick fever in the Oriental province of the Orange Free State is a relapsing fever produced by a spirillum probably identical with *Spirochæte obermeieri*, and thus this organism can be transmitted by the bite of the tick *Ornithodoros moubata*. In one experiment also they succeeded in transmitting the spirillum by the bites of young ticks newly hatched in the laboratory from eggs laid by infected parents.

Incubation Period.—The time between the bite of the tick and the development of the disease is usually about one week.

Symptomatology.—The onset of the fever is sudden; no rigor has been noted. The pronounced symptoms are: marked prostration, headache, boneache, backache, distaste for food, vomiting at commencement of illness, slight diarrhœa common, constipation rare, temperature in the evening may reach 105·3° F. There are usually three or four attacks, which often end in profuse perspiration. As a rule, each attack lasts three or four days, with an interval of five to ten days. Enlargement of the spleen, herpes, epistaxis and hiccough have been observed. Sudden and deep prostration during the attack and speedy recovery are characteristic features of the disease.

Twelve cases of tick fever in natives are recorded and an account of the disease in two Europeans, one of which possesses a melancholy interest, inasmuch as the sufferer was the late Dr. Dutton himself.

The Disease in Experimental Animals.—Experiments indicate that the spirillum does not kill the ordinary laboratory animals. To monkeys (the *Cercopitheci*) alone does the spirillum seem uniformly pathogenic. Rats, a guinea-pig, rabbits, monkeys (5), were experimented upon, and in all seven monkeys and one rat were infected with spirilla by the bites of ticks.

The Spirillum.—When the parasites are numerous they are seen in fresh preparations of blood as rapidly moving spiral threads. Should the spirilla in the blood be scanty, thick dehæmoglobinised blood films may be stained by a modification of Romanowsky's method, or with a weak solution of carbol-fuchsin. Measurements show spirillum vary between 43 μ and 13 μ.

Distribution of the Tick.—Ticks are found along the much-travelled roads; the rest-houses, not only in the Congo but in Uganda, are particularly liable to be infected. In infected houses the ticks are found in the dust and cracks of mud-floors, in bed platforms, in grass walls and thatched roofs. The bite of even a small tick is painful; between the toes and in the axilla are favourite places for the tick to bite, but they may bite any part of the body. The female lays eggs to the number of seventy or more, the largest number found being 139; the eggs adhere to each other and appear, under the low power, like bunches of glistening, brown grapes. The shape is somewhat round and measures from 959·4 by 841·32 μ to 767·52 by 664·2 μ. Under favourable conditions of soil (sandy), temperature and humidity, the eggs hatch in about twenty days. In about seven days a hexapod larva can be seen within the translucent shell; at almost the thirteenth day the egg shell splits; ecdysis takes place, the nymph throws off the shell and larval cast together. The larvæ are inactive.

The conclusions are:—

(1) Tick fever is clinically identical with relapsing fever, and has for pathogenic agent a spirillum.

(2) The spirillum is probably *Spirochæte obermeieri.*

(3) The tick *Ornithodoros moubata* can transmit the spirillum from animal to animal.

(4) Transmission is probably mechanical, but some developmental process is carried on in the tick.

(5) A considerable degree of immunity or tolerance to the spirillum can probably be acquired.

Louis W. Sambon, M.D.(Naples), London, stated that Drs. Dutton and Todd had proved the presence of relapsing fever in the Congo Free State, and that the tick *Ornithodoros moubata* was the propagator of the disease. The descriptions of a disease on the Zambesi given by Livingstone, Kirk, Dowson and Daniels were of too scanty a nature to conclude that it was relapsing fever, although the natives do certainly attribute the disease to the bite of this tick. If the disease of "Tete" in the Zambesi is a spirillum fever, then most probably the disease of "Miana" met with in Northern Persia is of the same nature. Moreover, if spirillum fever is transmitted by ticks on the Congo, in Uganda and in Persia, it is probably also conveyed by blood-sucking insects or ticks in India and elsewhere. Dutton and Todd's observations tend to prove the correctness of the views of Tictin, who in 1897 attributed the relapsing fever in Odessa to the bite of the common bed-bug. The wide distribution of spirillum fever and the fact that the spirilla could be fostered by different species of ticks showed that we might expect to find the parasite represented by a number of more or less distinct varieties, or even species. In many parts of the world, in South and Central America, in the West Indies, in Australia, and in the Malay Archipelago, ticks are known to be injurious to man. In some places, as in Mexico for instance, it is probably a spirillosis that they transmit; however, it is possible also that other organisms besides spirilla might be fostered and transmitted by ticks, such, for instance, as piroplasmata.

The case of infection by means of ticks hatched in the laboratory from eggs laid by infected parents, that had not previously fed on man or animals suffering from spirillum fever, and related by Drs. Dutton and Todd, was not sufficiently exact to be conclusive; but Dr. Sambon considers this mode of transmission to be the ordinary mode of transmission with ticks. The observation made by Dutton, Todd and Newstead, that whilst the ticks are feeding a whitish secretion from the Malpighian tubes escapes by the anus is interesting, but Dr. Sambon states that a portion of this white excretory matter is produced within the cells of the ventriculus. These cells when the tick is engorged with blood change their shape, allow of the passage of the elaborated food into the body cavity, and finally when emptied fall into the lumen of the ventriculus, but the cells still retain a certain amount of excretory matter in the form of crystals or concretions.

Major Ronald Ross, C.B., F.R.C.S., drew attention to the minute tick which is met with in some parts of India, especially amongst sportsmen. It is not unusual to find twenty or thirty minute ticks fixed round the neck just above the collar; the tick would seem capable of biting human beings at any time of the day.

Dr. J. C. Graham mentioned that in Sumatra he had seen small ticks of a greenish hue bite man; they adhered to the skin with marked pertinacity, presenting considerable difficulty in removal.

Dr. Albert J. Chalmers stated that in Ceylon a tick termed the "red-hot tick" was met with; the parasite got its name from the acute pain caused by its bite.

On the Pathogenic Ticks Concerned in the Distribution of Disease in Man, with Special Reference to the Differential Characters in Ornithodoros moubata.

By R. Newstead, A.L.S., &c.

Lecturer in Economic Entomology and Parasitology, Liverpool School of Tropical Medicine, in the University of Liverpool.

The objects of the present paper is to briefly summarise the pathogenic ticks concerned in the distribution of disease in man, with special reference to the differential characters in the external anatomy of of *Ornithodoros moubata*, Murray, together with an account of its life-history.

The Systematic Position of the Ticks.

Ticks (*Ixodoidea*) belong to the class *Arachnoidæ* (spiders, mites, &c.), order *Acarina*. Thus, they are closely related to the mites which produce *Acariasis* in man and animals. This super-family is divided into two sub-families, the *Argasidæ* and the *Ixodidæ*. The former is composed of two genera, *Argas* and *Ornithodoros*, while the *Ixodidæ* comprises nine genera. The members of the first division are recognised by the absence of a dorsal scutum, and the capitulum is more or less hidden under the projecting anterior margin. In the second division the capitulum projects from the anterior margin of the cephalic area, forming a projecting beak-like prominence; and immediately behind the capitulum, on the dorsal area, is a large scutum or shield. The buccal organs are highly organised in all the members of the *Ixodoidea* and are composed of four distinct bilateral parts. When about to take food from its host the animal fastens itself firmly by its legs, depresses its rostrum, and implants the toothed mandibles, and in proportion as these penetrate the hypostome follows and the retrograde teeth on the surface fixes this organ in the wound. In this way the hypostome and the mandibles are driven into the wound to their full extent, and so firmly do they become fixed into the derma that it is often impossible to remove the tick without leaving the mouth organs attached to the host or tearing away a small portion of the skin.

A fully engorged tick acquires considerable size, and after fecundation invariably falls from its host. Egg-laying takes place shortly afterwards and the animal subsequently dies. The eggs are usually concealed beneath some object. The young larvæ, on hatching, swarm up the herbage, or, as in the case of the domestic species, over the floor of the native huts, seeking any convenient spot in which they can conceal themselves, only to sally forth in the dark to seek a new host.

Some species of ticks pass the whole of their lives, from the larva to the adult stage, on one host. Others have two hosts, and some species require three hosts, but the members of the genera *Ornithodoros* and *Argas* have an indefinite number of hosts and may live for several years.

The ticks concerned in the transmission of human diseases are three in number: *Argas persicus*, *Ornithodoros moubata*, and *Dermacentor reticulatus*.

(1) Of the Miana bug (*Argas persicus*) very little is known with regard to its injury to man, but it is said to be a terrible scourge to travellers both in Persia and Beluchistan. This species is also responsible for the transmission of the spirillosus of the domestic fowl, a disease which is very prevalent in South Africa and Australia, but it [illegible]

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July 2.—Second batch of 51 eggs laid. These were protected for a few days beneath the body of the parent.

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Bruhl's Disease, with Special Reference to the Blood Changes Found, and Connection with the Leishman-Donovan Bodies.

By P. W. Bassett-Smith.

Fleet Surgeon, R.N., Haslar.

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Leishman Bodies and Oriental Sore.

Sir Patrick Manson also drew attention to the question of the Leishman body and that found in

Louis W. Sambon, M.D.(Naples), London, stated that Drs. Dutton and Todd had proved the presence of relapsing fever in the Congo Free State, and that the tick *Ornithodoros moubata* was the propagator of the disease. The descriptions of a disease on the Zambesi given by Livingstone, Kirk, Dowson and Daniels were of too scanty a nature to conclude that it was relapsing fever, although th tainly attribute the disease to the bi the disease of "Tete" in the Zam fever, then most probably the dis met with in Northern Persia is of Moreover, if spirillum fever is trans the Congo, in Uganda and in Per also conveyed by blood-sucking ir India and elsewhere. Dutton and T tend to prove the correctness of th who in 1897 attributed the relapsir to the bite of the common bed-bu tribution of spirillum fever and t spirilla could be fostered by differe showed that we might expect to represented by a number of mor varieties, or even species. In n world, in South and Central Amer Indies, in Australia, and in the N ticks are known to be injurious t places, as in Mexico for instance spirillosis that they transmit; how also that other organisms besides fostered and transmitted by ticks, as piroplasmata.

The case of infection by means o the laboratory from eggs laid by inf had not previously fed on man or from spirillum fever, and related b Todd, was not sufficiently exact to Dr. Sambon considers this mode of the ordinary mode of transmissior observation made by Dutton, Tod that whilst the ticks are feeding a from the Malpighian tubes escap interesting, but Dr. Sambon states this white excretory matter is pr cells of the ventriculus. These c is engorged with blood change the the passage of the elaborated fo cavity, and finally when emptied fal the ventriculus, but the cells sti amount of excretory matter in the concretions.

Major Ronald Ross, C.B., F.R.C to the minute tick which is met wi India, especially amongst sportsmen to find twenty or thirty minute ti neck just above the collar; the tick of biting human beings at any time

Dr. J. C. Graham mentioned th had seen small ticks of a greenish l adhered to the skin with marked per considerable difficulty in removal.

Dr. Albert J. Chalmers stated that in Ceylon a tick termed the "red-hot tick" was met with; the parasite got its name from the acute pain caused by its bite.

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Lecturer in Economic Entomology and Parasitology, Liver-

have an indefinite number of hosts and may live for several years.

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(1) Of the Miana bug (*Argas persicus*) very little is known with regard to its injury to man, but it is said to be a terrible scourge to travellers both in Persia and Beluchistan. This species is also responsible for the transmission of the spirillosus of the domestic fowl, a disease which is very prevalent in South Africa and Australia, but it does not affect man in these regions.

(2) *Ornithodoros Moubata.*—In many respects the habits of this species are not unlike those of *Argas persicus*, but so far as I have been able to ascertain the inert character of the larva of *O. moubata* is unique among the *Ixodinæ*, in that it passes the whole of its life within the egg.

(3) *Dermacentor Recticulatus.*—This is the tick which Surgeon John F. Anderson thought to be responsible for the transmission of spotted fever or tick fever of the Rocky Mountains region in the United States of America. Anderson founded his theory on the grounds that the fever was always found where there was a history of tick-bites about one week before the outset. Claim not substantiated.

Observations on the Engorged Tick and Her Progeny.

The female became very restive after feeding and made repeated attempts to escape from the bright sunlight. She was put into a Petri dish on a deep layer of dry sand, in which she rapidly buried herself, and placed in a dry incubator at an even temperature of 29° C. After laying the first batch of eggs she was placed in a partly hollowed-out banana and enclosed in a cardboard box. The animal immediately left the banana, and took up a position in a broad groove where she was partly concealed, in which position she remained fixed, inert until long after the third batch of eggs were laid. No attention was paid to the banana; indeed, she made a hasty retreat from the fruit, and got as far away from it as the limits of her cage would permit. Here two more batches of eggs were laid, both lots being protected for a few days beneath the body of the parent, but both lots finally slipped from beneath her and fell intact to the bottom of the box. She defæcated three times during the period of egg-laying; the white fluid-like fæces when dry left a white deposit resembling French chalk in texture. The actual process of egg-laying was not observed. The length of the tick before feeding was 7 mm. The weight before feeding was ·0270 grms., after engorgement ·2602 grms., or an increase of about ten times her orginal weight. This was not a very marked increase, as compared with certain other species of female ticks, which are known to increase to about thirty times their original weight after engorgement. Batches of eggs were laid on the following dates during the night:—

June 29.—First batch of 17 eggs, these were found in a little cluster at the bottom of the Petri dish.

July 2.—Second batch of 51 eggs laid. These were protected for a few days beneath the body of the parent.

July 10.—Third batch of 26 eggs laid. These were also protected by the parent for a few days.

Bruhl's Disease, with Special Reference to the Blood Changes Found, and Connection with the Leishman-Donovan Bodies.

By P. W. Bassett-Smith.

Fleet Surgeon, R.N., Haslar.

At the Royal Naval Hospital, Haslar, two cases of splenic anæmia and Bruhl's disease came under treatment. Bassett-Smith took the opportunity of their presence there to test the question proposed by Dr. J. C. Low, of the London School of Tropical Medicine, whether the cases of so-called splenic anæmia were, or were not, associated with the presence of Leishman-Donovan bodies in the splenic blood. Both the men examined had been abroad and suffered from marked anæmia and splenomegaly. The blood drawn from the spleen by punctures gave negative results as to the presence of the Leishman-Donovan bodies, nor were there any signs of malarial infection.

The result of the examination would seem to indicate that splenic anæmia is not due to any parasite, but belongs to that class of cases which come under the term of primitive splenomegaly in contradistinction to the true tropical splenomegaly in which the Leishman-Donovan bodies play so important a part.

Notes on Two Cases of Febrile Tropical Splenomegaly (Kala-azar), and a Suggestion.

By Sir Patrick Manson, K.C.M.G., F.R.S.

Of the cases reported, Case I., was that of a man, aged 41, who had resided for nineteen years on the borders of Assam. He had mild continued fever three years ago. He came to England in 1904, returned to Bengal in July, and within a week or ten days after his return the present illness began. He continued to have fever at intervals, and on November 3rd, 1904, left India, reaching England December 5th, when he came to the Seamen's Hospital. Before he left India the liver and spleen were much enlarged. When admitted to the Seamen's Hospital the patient was well nourished, but weak; skin muddy; spleen firm, but not tender, enlarged, reaching 4 inches below costal margin; the liver was smooth, slightly tender and enlarged, extending 1 inch below costal margin in nipple line.

Leishman bodies were found on splenic and hepatic punctures. Arsenic was administered in increasing doses. From January 23rd to February 27th arsenic discontinued and X-rays tried, but without benefit; in fact, he lost weight after discontinuing arsenic. On March 2nd, arsenic and trypanroth hypodermically was commenced and continued until May 3rd, but without apparent benefit.

Case II. was that of a man, aged 22, born in India, educated in England, and went out to India two years before being taken ill. The symptoms on admission to hospital indicate kala-azar and the blood showed Leishman bodies, but not quite like the appearance these bodies usually present. The patient died of broncho-pneumonia on May 13th, 1905, having been ill since December 10th, 1904.

Leishman Bodies and Oriental Sore.

Sir Patrick Manson also drew attention to the question of the Leishman body and that found in

Oriental sore as an interesting pathological point. In tropical splenomegaly the Leishman body is found in the spleen, liver, bone-marrow, glands, intestinal ulcers, &c.; in Oriental sore it occurs only in the sore. In the former ailment marked constitutional disturbances occur; in the latter the infection is strictly localised, and there is no recorded constitutional disturbance, but it stands to reason that in Oriental sore there must be some constitutional recognition of its presence. In Baghad the Jews, dreading an attack of Oriental sore on the face, have for generations practised inoculation from the sore on some part of the trunk or limbs, so that the scar left by the sore may not cause unsightly facial disfigurement. They are tempted to perform the inoculation by the recognition of the fact that inoculation by and against the ailment is protective. Assuming, therefore, that the bodies met with in kala-azar and Oriental sore are identical, and that whereas the former is malignant whilst the latter is benign in its course, it follows that the malignity of the kala-azar germ has been got rid of in some way or other.

Oriental sore exists in countries in which the camel is known, and drivers of camels are especially liable to the disease. Manson believes, therefore, that Oriental sore stands to kala-azar as does vaccine to small-pox, and as small-pox loses its virulence when passed through the body of the cow, so may the bodies met with in kala-azar be modified by passing through the body of the camel, and give rise to a mere local manifestation of inoculation (Oriental sore) instead of the virulent form of the disease—kala-azar. If this is really the case, a means of preventing kala-azar at once presents itself.

Guinea-worm and its Hosts.

By W. M. Graham, M.B.

Medical Officer, West African Medical Service.

From observations made in 1904 at Gambaga in the hinterland of the Gold Coast Colony, Dr. Graham found that there is one month in the year, namely, June, during which the signs and symptoms of Guinea-worm infection attain their maximum. Assuming that the cyclops is the alternating host with man of the Guinea-worm, the induction appears legitimate that the month of maximum manifestation in man is the month of maximum infection of cyclops. Fedtscheuke showed that in Turkestan Guinea-worm embryos require five weeks for complete development in cyclops. Embryos, therefore, beginning this development in June would become capable of infecting man in July or August of the same year; and as the parasite acquired by man in July or August would become manifest by discharging embryos in the following May or June, it would seem that ten months represent roughly the period required by the Guinea-worm for its complete development in man. Allowing that the infection of the cyclops with Guinea-worm occurs during the months of May and June, are there natural facilities afforded to the process of infection at this time?

Dr. Graham essays to answer this question by an exact description of the water supply of the locality in which his observations were made. The villagers drew their water from three wells connected by channels, in which water flowed during certain months, and in certain months were dry. When the streams were full of water cyclops were found in the streams and not in the wells, but when the channels were dry the cyclops occurred in the wells and bred there. The natives stand in the wells during the dry season whilst drawing water; the embryos in their legs can then escape and infect the cyclops.

The prophylaxis of Guinea-worm infection would seem to consist of (1) careful filtration of the drinking water; a fine handkerchief will serve the purpose, as by this means cyclops can be readily removed; (2) prevention of infection of cyclops by providing troughs for the natives to draw water from, so that the cyclops is excluded.

W. Carnegie Brown, M.D. (formerly of) Penang, said that in the Straits Settlements Guinea-worm infection was not endemic, but amongst immigrants from the Coromandel coast of India, where the disease was endemic, to the Malay Peninsula excellent opportunities for studying several points in the life-history of the worm were afforded. He had seen a dracunculus abscess as late as eighteen months after the arrival of immigrants from India. He had observed no periodicity in the manifestation of the disease in the Straits Settlements, and although *Cyclops quadratus* was found in the streams and canals of the Malay Peninsula, the cyclops did not seem capable of developing their embryos, at least to a degree hurtful to man. Dr. Brown is of opinion that the embryos gain access to the human body by way of the skin, and whilst the patient is standing in water.

F. M. Sandwith, M.D., F.R.C.P., Cairo and London, corroborated Dr. Graham's remarks concerning the periodicity of Guinea-worm manifestations in man. In the Soudan human beings suffer from *Filaria medinensis* during two or three months of the year only. The point to investigate would seem to be whether or not the embryos can enter the skin of man without passing through any species of cyclops.

Louis W. Sambon, M.D., said that the greater incidence of Guinea-worm manifestation had long been known to take place in connection with the rainy season. Actual contact with water was necessary for the extrusion of the embryos, a fact which has been known to natives of Guinea-worm countries from time immemorial. The location of the parasite usually about the lower extremities was in correlation with this necessity and had nothing to do with its mode of entrance. Other parasites behaved in an analogous manner. The rediæ of *Fasciola hepatica* in dry seasons harboured within the liver of *Limnea truncatula*, did not give birth to free-living cercariæ but to a second generation of rediæ which remained in the host of their parent awaiting for more favourable meteorological conditions. In regard to penetration of the skin by Guinea-worm embryos, it must be remembered that other parasites such as *Strongyloides intestinalis* and certain trematodes are considered to do likewise. Errors in this belief are, however, likely to arise; the larvæ of warble-flies (*Hypoderma*) were believed to penetrate the skin of the cattle they infest; now it is known that the cattle whilst licking their coats convey the parasite to the alimentary

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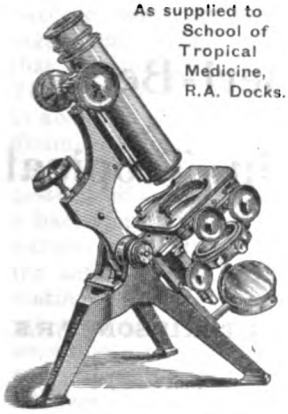
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Colonial Medical Reports—No. 11—HONG KONG (*continued*).

most uncertain. Locally, around the bubo, when the injection was made in that region, there appeared in some cases slight œdema. As regards its general effect viewed broadly, the marked constitutional and local amelioration which is seen in the case of the administration of diphtheria antitoxin was absent. The addition to the serum of an equal quantity of immune serum (serum from convalescent cases) seemed to produce one marked reaction, namely, a profuse diarrhœa. This was constant in the cases, and was always of the same nature. May this have been an effect on the part of the body to get rid of noxious principles? It will be interesting to watch its effects again under similar conditions. In one particular, however, the administration of Yersin's serum was most interesting. I noticed in some of the earliest cases that when plague bacilli were found in the blood in life, they were absent from the heart blood and tissues after death. In six cases of bubonic and one of septic plague in which the bacillus was readily demonstrated in life, it could not be found in any of the tissues after death—namely, the bubo, spleen, liver, lungs, kidneys and heart blood. In certain other cases—thirteen bubonic and one septic—examination after death revealed the presence of the bacillus in the bubo (in the bubonic cases) in varying numbers—in some swarming, in others numerous, in others a few—and in the same series none could be found in the heart blood in eight cases, none in the spleen in four cases, whilst in the remainder of these cases a few could be found in the spleen. In five bubonic cases the bacilli were numerous in all the organs and tissues after the injections. Thus we see that in nearly 17 per cent. of cases treated by Yersin's serum no bacilli could be found after death, in about 33 per cent. they were absent or appreciably diminished in numbers in the heart blood and spleen. On a consideration of these facts the question suggests itself—does the serum act as a bactericide or as a bacteriolytic agent? Is the absence, or the diminution in number, of the bacilli to be attributed to the action of the serum? I am aware that in estimating numbers in this manner objection may be taken on the ground that the method is not rigidly scientific. I grant that. It is, however, difficult, if not impossible, to reckon in any other way, and at all events whatever the error may be it is uniform. On the whole, I strongly incline to the opinion that the serum is effective in the direction of destroying the plague bacilli within the body, as their absence from the heart blood in about 50 per cent. of the cases shows. Why, then, does it not meet with more success when applied as a means of treatment? The reason probably is that cases of plague do not come under treatment early enough, are not, in point of fact, diagnose dearly enough. In consequence the poison is poured out rapidly from the bacteria and penetrating into the system closely and widely gets out of range of the serum, which is only a bactericide and not an antitoxin, and hence has very little effect, if any, upon the course of the disease. I think, however, that if the treatment of a case were to be undertaken sufficiently early, or, on the other hand, if the constitution of the serum could be suitably modified, the effect of its action would be probably more successful. Acting upon these ideas it is my intention to again use the serum when opportunity occurs. (It is right, I should add, that the serum which I used had been kept in the colony for some time, and that some of it came *via* Suez—two circumstances which may have combined to impair its efficiency to some extent.)

Reviewing the treatment of plague and considering as well other methods which have been applied from time to time, I fear it is impossible to avoid the conclusion that up to the present we have discovered nothing that is really effective, nothing that can rank as a specific in the same way as the diphtheria antitoxin. The use of carbolic acid in heroic doses was not conspicuously successful, and I consider we have sufficient grounds to revise the favourable impression which was formed of it the previous year. The only effective means of treatment we can adopt is to keep up the strength of the patient and at the same time watch the action of the heart and guard against its weakness and failure. Should we be able, by so doing, to tide over a sufficient period of time, the effect produced by the intensity of the poison will be reacted against and ultimately overcome by the formations of antitoxin in the blood, and then the system will be enabled to resist the infection and go on to recovery. Four cases of plague were admitted which had passed the critical stage of the disease without having been treated. They did not require much treatment in hospital beyond that which I have sketched above, and they ultimately recovered. Until we can discover an *anti*-body our treatment cannot be anything but expectant and symptomatic, and, above all, we should refrain from interfering with or thwarting the processes of Nature.

Thus, being impotent as regards treatment, it behoves us to be most careful in preventing the development and spread of plague. The consideration of the means is out of place in this report, but I might summarise concisely what is required to this end—elbow room, fresh air and sunlight.

Clinical Notes.

The Maturation of the Bubo.—I have found in some cases that when the bubo, if it was a solitary one, matured and opened spontaneously and discharged freely, the prognosis was much more favourable and the patient generally recovered. In three such cases I found no plague bacilli in the discharges (although they had been present in the blood), but there were crowds of staphylococci; in another case the pus was sterile. The plague bacilli in such cases seem to disappear, but whether this disappearance is caused by the local leucocytosis I am unable to say. At any rate, the discharging bubo seems to act as a sort of destructive agency for them, and as a consequence the active secretion of the poison must be proportionately modified. Acting upon this idea I endeavoured to imitate the process of Nature, and when suitable cases occurred the bubo was assiduously fomented with hot sublimate solution, and if it matured was opened. Two cases treated like this recovered, many

did not. It may be urged that it is only in mild cases that solitary buboes are present, for I found it convenient to treat in this manner only those cases in which solitary buboes were present; but the number of buboes is not always in proportion to the degree of infection, and as Nature has given the hint, it is worth working on those lines.

The Development of Pustules on the Sites of Bruises.—The following case is interesting as pointing to a possible means of spread of plague. The patient, a Chinese female, aged 35, was admitted in a very low condition. She had a left femoral bubo and tenderness over the left inguinal region. She had been under Chinese treatment and was pinched over the chest and arms, the sites being indicated by symmetrical bruises. There were also two patches of necrosis, one over the inferior angle of each scapula; these were about the size of a florin and were superficial. Whether these were caused in the process of Chinese treatment or whether they were of the nature of bedsores, I am unable to say. The interesting point is that plague bacilli were found in these two patches. On the site of the bruises small papules grew up, which gradually progressed until they became converted into pustules, and in these pustules plague bacilli were found in numbers. Eighteen days after admission the bubo was opened—no plague bacilli could be found in it. Eventually the patient recovered. The point of interest in this case is that one should note a possible means of spread of plague. Under native treatment counter-irritation is applied in cases of plague, and pustles may develop which may contain plague bacilli. These pustules may be ruptured, or they may dry, and crusts with plague bacilli be shed, as happens with dried sputum in tuberculosis, and thus acutely infectious material be wafted about. And there are in this colony sufficiently harmonious congenial surroundings for the growth and life of germs so conveyed.

Subcutaneous Hæmorrhages as a Means of Proprosis.—As is well known, hæmorrhages into organs and tissues are common in plague. They occur as well in the bubonic variety as in the septic. When hæmorrhages take place under the skin of the extremities they become visible as large patches, bluish-purple at first, then brownish-black, and are generally of unfavourable import. In two cases this occurred. The first was a well-nourished Indian police constable in good physical condition, suffering from septic plague. He was admitted on the third day of illness. The temperature kept up between 101° and 105°, fell to 98·8° on the sixth day, and rose again to 105° on the eighth day. At first the pulse was rapid and strong, then the rate fell with the fall of temperature, and later it became softer and dicrotic and weak. He became delirious, suddenly extensive hæmorrhage appeared under the skin of the ankles and elbows, and he died shortly after. The second case was a male, aged 33, suffering from bubonic plague. Large patches of hæmorrhage appeared on the anterior surface of legs and dorsum of feet, also on forearms and around elbows. In about three hours after, death ensued.

Small-pox Supervening on Plague.—The co-existence of two acute infectious diseases like small-pox and plague is noteworthy, and I give short notes of such a case. The patient, a Chinese male, aged 38, was admitted suffering from septic plague. It was the fourth day of the illness, and the usual signs of septic plague were present. The blood examination showed the presence of plague bacilli. Two days after a small papular rash appeared over the body, and the temperature went down to 101° from 102·8°. On the eighth day of illness small-pox was unmistakably developed, the rash becoming typically vesicular and confluent, and affecting the palate and fauces, as well as the palms and soles. He died the next day. He had not been vaccinated. The source of infection could not be traced. In view of the fact that a varioloid eruption has been stated to occur in some cases of plague, it is interesting to note that small-pox may undoubtedly supervene. An error in diagnosis may occur when such an eruption exists, but it can only simulate a mild attack of small-pox. When, however, other signs, all confirmatory, exist—as in this case—there can be no doubt. The course of the plague seemed to be altogether suppressed by the small-pox.

A Case of Plague Terminating in Bronchitis and Progressive Atrophy.—The following case is interesting as showing the depth of debility to which an attack of plague is able to reduce its victim, and the case with which other infective agents are able to obtain an effective foothold and breeding ground. The patient, a Chinese female, aged 17, was admitted on the sixth day of her illness suffering from bubonic plague. She had a right and a left femoral bubo, and plague bacilli in her blood. She was very weak, was delirious, her tongue was brownish and dry, and there were sordes about her teeth. There were two small pustules about $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter on the right leg, and a small ulcer behind the left knee; from there no plague bacilli could be isolated. Four days after she developed bronchitis. Examination of sputum showed no tubercle and no plague bacilli, the temperature remained persistently high, there was slight dulness in the right base, which quickly passed away. Repeated examinations of sputum showed no tubercle and no plague, and latterly there were no plague organisms in the blood. When this was ascertained to be the case she was transferred on the thirty-second day of her illness to the Tung Wah Hospital. She had three injections of Yersin's serum, and was taking iodide of iron and cod-liver oil. At the Tung Wah the evidence of bronchitis was persistent, and she lost ground steadily, becoming gradually more emaciated and weaker. She died about three months after she contracted plague.

The following is the report of the *post-mortem* examination: The body was extremely emaciated—I have never seen a more emaciated body. There was œdema of the lower extremities, and small bedsores over the trochanters and ischia. The heart was soft and flabby—fatty degeneration. Lungs: in both there was marked evidence of chronic bronchitis. There was slight evidence of tubercle, one or two nodules the size of a bean in the right apex in which tubercle bacilli were present. No pleurisy. About 4 ozs. of clear yellow fluid in each pleural cavity. The liver was diminished in size and weight—about 40 ozs.; it was very anæmic. There was fine cirrhosis and marked iron pigmentation. Gall-bladder was not dis-

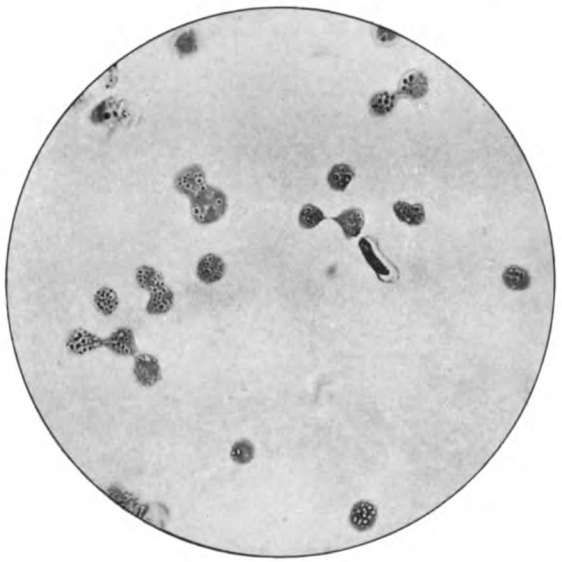


FIG. 2.



FIG. 3.

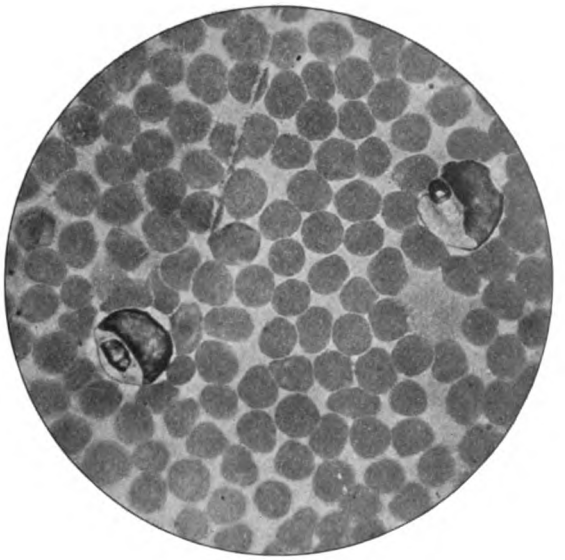


FIG. 4.



FIG. 6.



FIG. 7.

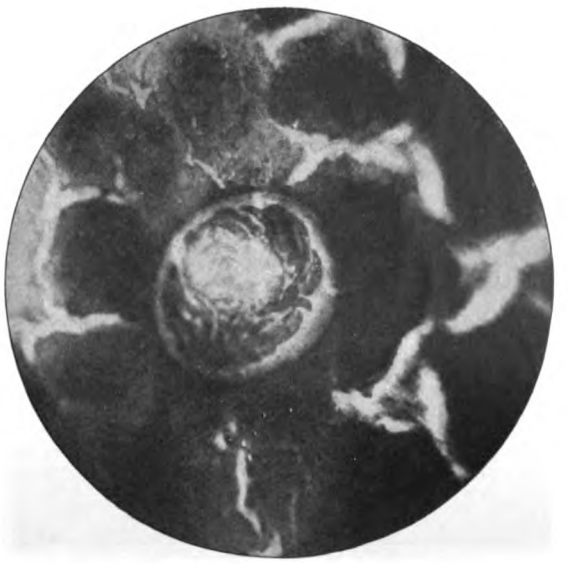


FIG. 8.

To Illustrate Dr. ANDREW BALFOUR'S article, "A Hæmogregarine of Mammals."

tended, the bile was very thick. Spleen small in size, weight 4 ozs., capsule thickened; anæmic; diffuse amyloid; marked malarial pigmentation, but microscopically no parasites. Stomach and intestines normal. Mesenteric glands normal. Kidneys pale and fatty. Pelvic organs normal. Brain normal—glands all normal. No plague bacilli found. This case is interesting as demonstrating a condition of progressive atrophy combined with chronic bronchitis and malarial cachexia. The tubercular progress was not active.

The Formation of Fibrin in Plague Blood.—The blood of convalescent plague patients, as I observed in three cases, is very thin and watery. The percentage of hæmoglobin is diminished and the number of leucocytes increased. Fibrin formation is delayed. In ten instances which I observed it took almost five minutes to form. The percentage of fibrin seems lower than normal. These points, however, I was not able to investigate very thoroughly.

Report of the Superintendent of the Government Civil Hospital.

Dr. J. Bell, the Superintendent of the Government Civil Hospital, submits the annual report for 1904 on the work done in the Government Civil and Maternity Hospitals, with the usual statistical tables.

Police.

There were 707 admissions as against 759 in 1903, the strength being 935 as against 921, or 75·61 per cent. of the force were under treatment as compared with 82·41 per cent. in 1903 and 106·4 per cent. in 1902.

There were 12 Europeans, 89 Indians less and 49 Chinese more admitted as compared with last year. Average stay in hospital per man was 9·2 days.

Table I. gives the sick and mortality rate in percentage of strength for the last ten years.

The following table gives the admissions and deaths from the various sections of the force during the last ten years :—

Year	Europeans	Indians	Chinese	Total Admissions	Total Deaths
1895	90	254	116	466	8
1896	94	370	124	588	14
1897	99	320	107	526	7
1898	87	279	122	488	19
1899	117	421	154	692	16
1900	183	522	215	920	4
1901	202	521	214	937	8
1902	150	479	307	936	2
1903	130	431	198	759	5
1904	118	342	247	707	4

There were 4 deaths as compared with 5 in 1903 and 2 in 1902. Of these, 2 occurred amongst the European section, 1 amongst the Indian, and 1 amongst the Chinese. The causes of death were chronic Bright's (European), pernicious anæmia (Indian), phthisis (Chinese), and cerebral hæmorrhage (European).

There were 21 cases of invaliding—2 Europeans, 8 Indians, and 11 Chinese—the reasons for invaliding being chronic dysentery (1), cirrhosis of liver (1), chronic rheumatism (3), phthisis (3), paresis (1), anæmia (2), beri-beri (6), cardiac disease (2), dementia following head injury (1), debility (1).

Malaria.—One hundred and seven admissions as against 167 in 1903, or 11·55 per cent. of the force were attacked as against 18·13 per cent. The European section suffered to the extent of 7·87 per cent., the Indian 20 per cent., and the Chinese 5·73 per cent.

These figures show a marked decrease and it may be interesting to note that this decrease has been steadily maintained for the last five years. The percentages are as follows : 1900=45·03, 1901=44·69, 1902=19·97, 1903=18·13, and 1904=11·55.

None of the Europeans were in more than once for this illness. Of the Indians 2·81 per cent. had two attacks, 0·28 per cent. three, and 0·28 per cent. four attacks. Three Chinese (0·66 per cent.) had two admittances, and 2 (0·44 per cent.) had three.

The question of relapse in malaria is an interesting one, but not easy to settle in the Tropics, as it is impossible to eliminate the chances of a fresh infection in any particular case, and one's theories regarding the subject can only be speculative. Apart from "crescents," which do not occur in all cases, and which sooner or later die out, no latent form has been discovered *post mortem* to account for the relapse. The fact that out of 127 Europeans none have been in more than once is worth noting. The bulk of the repeat cases (11 out of 17) were from the same station, and only 6 came from different stations. Thirteen came in each time with the same form of malaria and 4 with different forms. The Indian with four attacks came in first with malignant, next with simple tertian, again with malignant, and finally with simple tertian, at intervals of almost exactly a month. The other three with different forms of malaria had first malignant attacks, followed by simple tertian and quartan respectively. These 4 cases must be eliminated from the list of "relapses," as the disease breeds true, so that the number is small out of such a large force. Only 6 cases showed crescents in their blood on admission, and of these only 2 were in twice at intervals of a month and two months respectively.

The following table gives the admissions compared to strength for the more important stations of the New Territory for the past four years :—

	1901.	1902.	1903.	1904.
Sha Tau Kok	30·7	...	15·38	13·3
Ping Shan ...	64·2	7·1	45·45	13·3
Sai Kung ...	28·2	16·6	16·6	50·0
San Tin ...	25·0	...	...	10·0
Tai Po ...	70·0	50·0	33·3	27·2
Tai O... ...	10·0	10·0	11·1	10·0
Sha Tin ...	25·0	...	12·5	33·3
Au Tau ...	121·4	7·6	61·5	50·0
Sheung Shui...	63·6	20·0	9·0	—

This shows a decrease in all stations but three—Sai Kung, San Tin and Sha Tin.

The average number of days spent by each man in hospital for this disease was 5·7 against 7·9 last year.

Phthisis.—Four cases were under treatment as against 13 last year. One died and the others were invalided. Two cases occurred amongst the Indians and 2 amongst the Chinese.

Dysentery.—Twenty-eight cases were under treatment as against 13, a large increase. Of these, 8 were Europeans, 18 Indians, and 2 Chinese.

Beri-beri.—Twenty-three cases, all amongst the Chinese section, as against 9 last year. We are still quite ignorant as to the cause of this peculiar malady, and hospital investigations throw no further light on the subject. None of the cases came from the New Territory or out-stations, the stations responsible being Central (14 cases), Water (4 cases), No. 7 (3 cases), and No. 2 (2 cases).

Typhoid Fever.—No cases of this disease occurred.

The various other ailments call for no special observations.

Table II. gives the admissions and deaths during each month of the year.

Table III. gives the admissions for malaria from each station. Exclusive of certain New Territory stations already dealt with, there is a *decrease* in all stations but four, viz., Mount Gough, Tsat Ttze Mui, Tsim Tsat Tsoi and Sham Sui Po.

Gaol Staff.

There were 73 admissions out of a staff of 125, or 58·4 per cent. against 82·79 in 1903. There were no deaths, but two Indians were invalided—one for phthisis and one for cirrhosis of liver. During the dysentery epidemic in June and July the Indian staff suffered somewhat, 3 and 6 cases being admitted out of 12 and 26 for all causes.

Sanitary Department.

There were 29 admissions as against 34 in 1903. There were no deaths and no invaliding.

Government Civil Hospital.

The total number of admissions was 2,585 as against 2,794 in 1903. The decrease is accounted for owing to its being necessary throughout the year to close one ward for repairs.

The total number of out-patients was 13,706 as against 11,911.

Attached are the following tables:—

Table IV.—Showing admissions and deaths in the hospital during each month.
,, V.—Showing operations performed.
,, VI.—Showing admissions and deaths under respective diseases.
,, VII.—Showing admissions and deaths in the Maternity Hospital.
,, VIII.—Showing varieties of malarial met with during the year.

The following table gives the number and class of patients admitted during the last ten years:—

Year	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Police	466	588	529	488	692	920	937	938	759	707
Paying patients	498	632	603	741	764	891	830	931	777	772
Government servants	203	269	227	186	208	266	339	460	319	267
Police cases	319	244	299	306	306	347	348	300	276	262
Free	668	778	742	785	739	569	466	454	646	555
Board of trade	129	87	45	65	25	37	28	25	17	22
Total	2,283	2,598	2,445	2,571	2,734	3,030	2,948	3,108	2,794	2,585

This shows, as compared with last year, a decrease in the number of patients admitted under all headings but Board of Trade.

The admissions and deaths for the last ten years are as follows:—

Year.	Admissions.	Deaths.
1895	2,283	114
1896	2,598	143
1897	2,445	119
1898	2,571	138
1899	2,734	114
1900	3,030	155
1901	2,948	153
1902	3,108	140
1903	2,794	142
1904	2,585	128

Of the 128 fatal cases 31 were moribund on admission and died within twenty-four hours.

The rate of mortality for the year was 4·9 per cent. as against 5·08 last year. The average daily number of sick was 93·94 as against 99·09.

Women and Children.—The number admitted was 238 as against 295. The death-rate was 9·2.

Nationality.

Europeans.—784 were admitted as against 802.

Indians and Coloured.—644 were admitted as against 748.

Asiatics (Chinese and Japanese).—1,157 were admitted as against 1,244.

Only 3 officers of the garrison were under treatment as against 6 last year.

(To be continued in next Journal.)

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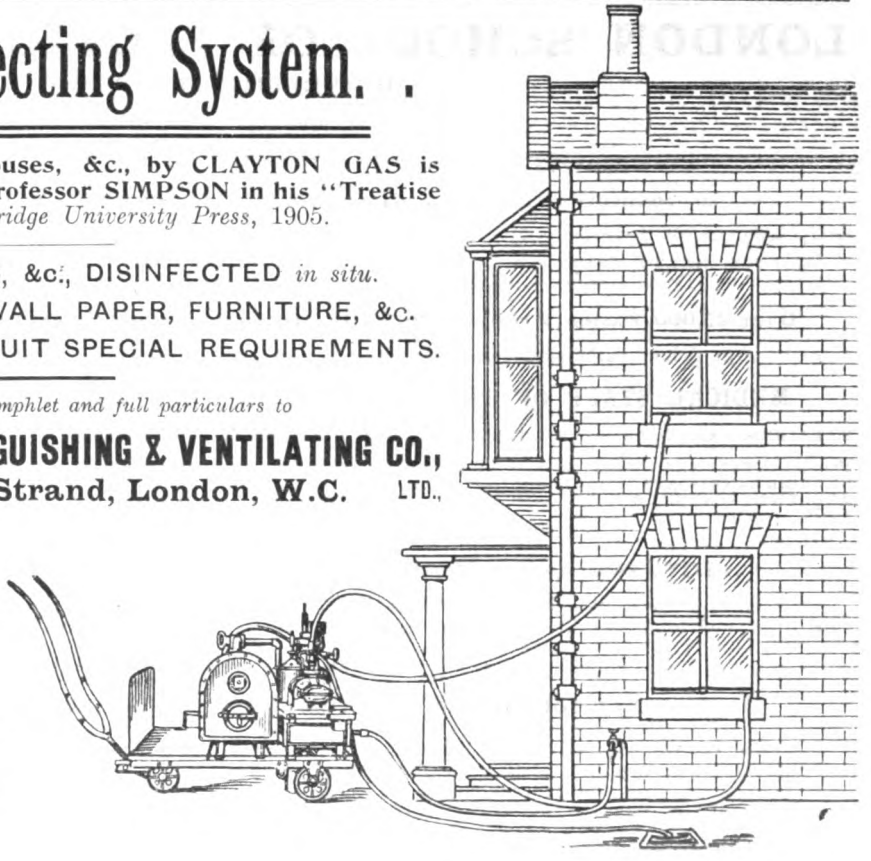
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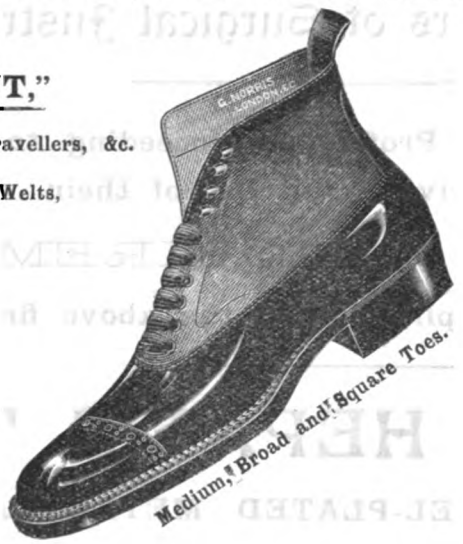
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canal, where after penetrating the walls of the œsophagus they advance through the tissues to reach the region of the animal's back. Dr. Sambon doubted the infection of man by the immediate entrance of the young larvæ either through the skin or the alimentary canal, and although it had been shown the larvæ of *Filaria medinensis* entered the cyclops, the experiments to bring about infection through the ingestion of infected cyclops had proved negative. Possibly cyclops was not the real host, notwithstanding the fact that the nematode might attain a certain stage of development in its body. On the other hand, it may be only certain species of cyclops that serve as hosts; or it may be that a second intermediary host is necessary; or it is possible that there may be a free-living stage with or without subsequent encystment, as in *Fasciola hepatica.*

William T. Prout, M.B., C.M.G., Principal Medical Officer, Sierra Leone, stated that there was an enormous amount of inefficiency on the Gold Coast, due to Guinea-worm infection, but the disease is very rarely seen at Freetown; Sierra Leone not being an endemic area of Guinea-worm infection. The difference may lie in the water supply, for whereas on the Gold Coast the water is derived from pools and shallow wells, the Sierra Leone supply is derived from streams from the hills. This would support the theory that drinking water is the channel of infection in human beings.

J. Tertius Clarke, M.R.C.S., L.R.C.P., Perak, Malay States, said that in the Malay Peninsula the water supply outside of the towns is usually bad. Although the cyclops is prevalent, and although the Tamils bathe in and drink water all over the district, they do not acquire Guinea-worm disease.

T. A. Chalmers, M.D., Ceylon, noticed the periodicity of Guinea-worm manifestations at Accra on the West Coast of Africa. He had searched there for infected cyclops without finding them. He did not think authorities in tropical medicine understood the great amount of physical infirmity the Guinea-worm caused, and it would be well were the disease more carefully studied.

Dr. Claus Schilling, Berlin, stated that a colleague who had experience of Guinea-worm disease in Africa had shown that when the native soldiers under his charge were compelled to take their drinking water from sources other than that in which they bathe, the disease disappeared. This would support the opinion that the infecting germ entered by the alimentary canal.

Tropical Diseases of the Skin.

By J. M. H. MacLeod, M.D., M.R.C.P.

Lecturer on Skin Diseases, London School of Tropical Medicine.

Dr. MacLeod opened the discussion on tropical diseases of the skin by regretting the absence of Prof. Jeanselme, of Paris. Dr. MacLeod approached the subject by arranging the tropical diseases of the skin into four groups:—

I. Parasitic Diseases due to some Known Parasite.—(*a*) Diseases due to Bacteria. In warm, as in temperate climates, tuberculous cutis affections are common and multiform; lupus vulgaris seems, however, rarer in tropical climates than elsewhere. Leprosy flourishes, at any rate at the present day, in tropical rather than in temperate climates, but the cause of the prevalence may have nothing to do directly with temperature. Removal of lepers to a non-leprous country would seem to be beneficial, and the explanation remains to be elucidated.

(*b*) Diseases due to Streptothrix. Madura foot is one of the best-known examples of a streptothrix invasion of the skin. The white variety of the disease is fairly well understood, but the black variety, which Kanthack regards as a degenerative form of the white, and Oppenheim declares to be due to an oidium, requires further study.

(*c*) Diseases due to Blastomycetes (Yeasts). Moist and warm climates are especially favourable to the growth of yeasts in the skin. Recently a skin affection resembling lupus vulgaris has been described in America, from which a yeast has been recovered; the name blastomycetes dermatitis has been given to this affection, which has proved fatal in some cases. In California and Buenos Ayres, a yeast has been discovered in similar cases, and the name *Dermatitis coccidoides* bestowed upon it.

(*d*) Diseases caused by Hyphomycetes or Moulds. Of these ringworm is the most important, the best-known variety being tinea imbricata, but the precise nature of the mould which causes it is still under dispute. Trebondeau considers it an aspergillus; Tabourand maintains it is a trichophyton, the opinion which obtains most favour. Pinta, another hyphomycetic disease, is ascribed to a variety of fungi, Penicillium, Aspergillus, Monilia, and Trichophyton.

(*e*) Animal Parasites. The best known is, of course, scabies, which is found in every clime. Pani-ghao or ground-itch—the sore feet of Assam—has also been ascribed to an Acarus, but recently it has been attributed to the penetration of the skin of the lower limb by the larvæ of ankylostoma. Elephantiasis arabum is attributed to the blocking of the lymph channels by the immature ova of the *Filaria bancrofti*, but this explanation is unsatisfactory. It would appear that some other unknown agent is at work in the production of elephantiasis. In Europe we are familiar with localised elephantiasis, believed to be due to streptococcic infection, associated with recurrent attacks of local erysipelas, giving rise to permanent inflammatory changes in the affected tissues, the lymphatic obstruction being secondary to the vascular changes.

II. Diseases in which there is Strong Evidence of a Parasitic Origin, but in which a Specific Micro-organism has not yet been Established.—Oriental sore, known under various names—Delhi boil, Biskra button, Bagdad sore, &c. — comes under this heading. Many micro-organisms have been described as causative of this affection, but lately the disease has gained prominence from the fact that an organism resembling Leishman bodies has been found to be present in these sores. The veld sore, which during recent years we have become familiar with among the soldiers in the South African campaign, has been shown by Bishop-Harmann to be due to a diplococcus—the *Micrococcus vesicans.* The phagedænic ulcer of warm countries is probably due to an undetermined form of bacterium. Pemphigus contagiosus seems to correspond with pemphigus acutus or P. neonatorum of temperate climates. Keloid is particularly common in black

and yellow races, and possibly results from inoculation of wounds by some micro-organism. Yaws (frambœsia) and its relation to syphilis has occupied attention for some time. Ulcerating granuloma of the pudenda has a widespread geographical distribution, but the specific organism, if there is one, has not been isolated.

III. Diseases in which Micro-organisms are generally Present, but are probably Secondary Factors in the Evolution of the Disease.—Prickly heat and Dysidrosis are the two ailments which stand out most prominently in this connection. Prickly heat, in all probability, is associated with some harmless microbe, as the eruption seems to occur independently of the sweat glands themselves. Dysidrosis or cheiro-pompholyx is closely allied to prickly heat, but affects the hands and feet more particularly. The disease seems independent of the sweat glands, and is frequently associated with an eczematous condition about the crutch and umbilicus, suggesting the presence of a micro-organism of low virulence.

IV. Non-parasitic Skin Affections of the Tropics.—Pellagra, acrodynia, ainhum, pigmentation and vitiligo are referrible to this group of skin affections met with in warm countries.

Pinta.

By F. M. Sandwith, M.D., F.R.C.P.

Consulting Physician, Kasr-el-Ainy Hospital, Cairo; Lecturer at the London School of Tropical Medicine.

Pinta, or spotted sickness, is a tropical disease caused by a fungus which produces discolourations of various kinds on the uncovered parts of the skin, and sometimes on the mucous membranes. Dirt and poverty seem to be predisposing agents. Both sexes are liable to the disease, and although persons between fifteen and twenty-five years of age are most liable to the disease, all ages may be attacked. Pinta is not hereditary, nor is it contagious. Mosquitoes, fleas, or bugs may serve to introduce the disease, which has been communicated to rabbits by inoculation. Nine varieties of the fungus exist, and some shade of violet seems the prevalent colour met with, but white, red, and yellow colours are also described. The eruption may begin on the face, nape of the neck, cheeks, nose, forehead, ears, and later may appear on the forearms, wrist, legs, ankles, and exposed part of the chest. The eruption is usually not symmetrical, and is accompanied by furfuraceous desquamation. The course of the disease may be divided into two stages: the first in which active increase of pigment occurs, the second characterised by disappearance of pigment and pseudo-vitiligo.

The disease may last twenty to forty years, and is considered incurable unless treated. The fungus—*Trichophyton pictor* (Blanchard)—consists of round or oval spores from 8 to 12μ in diameter, and of tapering branched mycelial threads to which the conidia are attached. The diseases with which pinta may be confounded are leucoderma (vitiligo), leprosy, pityriasis versicolor, lupus erythematosis, and the scars of favus. The treatment consists in applying tincture of iodine or Vleminckx's solution to the spots early in the disease; when the discolourations have lasted some time, chrysarobin ointment, or nitrate of mercury ointment may be tried. Patient's clothing and bedding should be sterilised, and bodily cleanliness insisted upon.

The Geographical Distribution and Etiology of Pellagra.

By Louis W. Sambon, M.D. (Naples),

Lecturer to the London School of Tropical Medicine.

Dr. Sambon said he believed pellagra to be far more common in tropical and subtropical regions than we know at present. Undoubtedly pellagra was still unrecognised in many of its endemic areas, its nervous symptoms, gastric derangements and skin lesions being ascribed to other and separate diseases. There was no cause for surprise in this. The recognition of pellagra was not always an easy matter for those who were not familiar with its symptoms and course. A parallel and instructive example was that of kala-azar, a disease which was believed to be confined to the Assam valley until the discovery of its specific agent showed that it dad a very wide distribution not only in India, but throughout the tropical world.

Pellagra was first accurately described by Gaspar Casal, in 1750, under the name of *Mal de la rosa*. In Spain and Italy the disease had been known for over a century and a half. In 1818 it was discovered in France; in 1833 in Roumania; in 1839 in the Island of Corfu. More recently other endemic centres had been found in Portugal, in Tyrol, in Dalmatia, in Croatia, in Bosnia, in Turkey, in Greece, in Bessarabia and in Kherson. In Africa, pellagra was first recognised in 1847, by Pruner, who had studied the disease in Italy. Sandwith had recently found it to be very prevalent in Lower Egypt, less so in Upper Egypt. The disease had also been seen in Algeria, on the coast of the Red Sea, and amongst the Kaffirs and Zulus. From Asia we had no definite information, but Dr. Ray and others had noticed skin lesions similar to those of pellagra in India. In America, pellagra had been recognised in Mexico, in Brazil, and in the Argentine Republic. Dr. Low, who had had the opportunity of seeing cases of pellagra in Italy, thought that he had recognised the disease in the West Indies, and a further enquiry had convinced Dr. Sambon that pellagra was not uncommon in Barbadoes and other West Indian Islands. Finally, Dr. Neiret had reported it from New Caledonia.

Considering the wide geographical reach and grave importance of the disease it was urgent that medical men should learn to recognise it. In Italy pellagra was rightly considered one of the worst disease scourges of the country. About 100,000 cases were known, and the disease was dreaded, not so much on account of its deadliness, but because of the indescribable wretchedness and suffering to which it gave rise during its slow, cruel course of many years. The disease was characterised by an erythema affecting the unclothed parts of the body most exposed to the sun, recurring each spring and leaving behind a peculiar roughness and pigmentation of the skin which gave rise to the Italian name pellagra, meaning rough skin. In its later stages it is characterised by progressive weakness, great emaciation, and by severe melancholia alternating with maniacal phases. The disease presents, moreover, very marked gastro-intestinal symptoms, the

tongue and palate lose their epithelium, and diarrhœa is frequent, becoming unrestrainable towards the end.

Pellagra had been attributed to insolation, to bad water, to insanitary dwellings, to poverty, to the use of irritant oils in the preparation of food, to onions, garlic and maize. Most of these theories had been abandoned and therefore needed no discussion, but the maize theory called for a very serious scrutiny because it was almost unanimously accepted. At first it was believed that maize lacked in nutritive principles, later it was surmised that it contained normally some toxic substance, finally, it was agreed to ascribe the disease not to normal maize, but to diseased maize, some incriminating certain toxic substances developed in the course of the decomposition of the grain under the influence of vegetable organisms, others incriminating the organisms themselves. Consequently the various fungi and bacteria affecting maize were all in turn made responsible for the causation of pellagra.

In describing the numerous researches, Dr. Sambon pointed out that each investigator had claimed to have reproduced true pellagra in animals and sometimes even in man, by the administration or inoculation of the special poison or organism which he had isolated. It was evident, therefore, that these experiments had no better value than those by means of which Klebs and Tommasi Crudeli had sought to prove that their famous bacillus was the real cause of malaria.

The most recent investigations were those of Dr. Petri, Ceni and Besta, who incriminated certain varieties of *Aspergillus* and *Penicillium*, but their experiments were by no means convincing. The organisms they incriminated were amongst our most common fungi; they could be found not only in diseased bread, but on the most heterogeneous media, such as fruit, cloth, jam and old boots.

He did not believe in the current maize theories of pellagra any more than he believed in the various rice theories of beri-beri, but he was quite prepared to believe that like the swamp in malaria, so maize and rice might represent necessary ækological factors in the natural history of the disease with which they had been so long associated in popular belief. So far, however, no conclusive evidence had been adduced in favour of the maize theory of pellagra. The maize theory of pellagra was chiefly an Italian theory. It had never found much favour in Spain, one of the principal seats of pellagra endemicity, where the disease was to this day regarded as a true *morbus miseriæ*. It had been frequently pointed out that the endemic areas of pellagra and the areas of maize culture were by no means overlapping, and, indeed, vast areas of maize cultivation had no pellagra, as, for example, the United States of America. On the other hand, pellagra had been observed in places in which maize was not cultivated and in people who had never used it as an article of food. To overcome these embarrassing obstacles to the maize theory, the ingenious term "pseudo-pellagra" had been invented. The disease therefore was pellagra only when it could be connected with a maize diet, in every other case it was nothing more nor less than "pseudo-pellagra."

A comparative study of the distribution and prevalence of pellagra at different periods was decidedly unfavourable to the maize theory. In the days of Casal, the province of Oviedo, in Spain, was one of the chief centres of pellagra. In 1900 it was the province which suffered least from this cause, whilst the highest incidence of the disease fell on the province of Madrid. Now, no change whatsoever has taken place in the maize cultivation of the province of Oviedo; the people there eat maize just as much as before, and no improvement has ever been adopted in the storage or preparation of maize. On the other hand, maize is hardly ever used as an article of food in the province of Madrid.

No less striking are the facts afforded by the spread of the disease in Italy. Pellagra is still very prevalent in the north of Italy, where maize forms the staple food of the peasants, but in recent years the disease has become far more prevalent in Umbria and in the Marche, and it has invaded the provinces of Siena and Grosseto in Tuscany, those of Campobasso, Teramo, and Aquila in the Abruzzi, and Molise, in which maize does not represent a principal article of food. It has also invaded the Campania, the Puglie, Sicily, and Sardinia, thus proving that it has a tendency to spread slowly but widely, and independently of maize cultivation.

When once established in a region, pellagra was very permanent, but its prevalence varied considerably from year to year, not always in direct connection with the amount of rainfall as has been erroneously asserted, but in connection with other ækological conditions as yet undetermined.

Dr. Sambon questioned the general belief that pellagra had appeared soon after the introduction of maize into Europe, and that it had advanced *pari passu* with the extension of maize cultivation and the adoption of the new cereal as an article of food. He pointed out that the disease did not attack indiscriminately all those who partook plentifully of maize, but only the field labourer. The poor who lived in towns and who fed exactly in the same way were not attacked. Towns in the very heart of intensely pellagrous areas showed that same remarkable immunity to pellagra that towns in malarious regions showed to malaria. Possibly, therefore, it was in the maize-field that the field labourer contracted the disease. Another important fact to consider was the age incidency of the disease. Pellagra was chiefly a disease of middle age. The majority of cases occurred between 20 and 50 years of age. If maize or bad maize were the cause of the disease, children would be the principal sufferers. This was so in the case of ergotism.

Pellagra did not attack all the members of a family at approximately the same time, as would be the case if the disease were due to some toxic food partaken equally by all. Pellagra exhibited a marked seasonal incidence, and in those who had contracted the disease there occurred a peculiar recrudescency of all the symptoms each successive spring. These facts were incompatible with the maize theory. The characteristic erythema of the disease reappeared constantly every spring in chronic pellagrous lunatics secluded in asylums in which maize was never an article of food.

Dr. Sambon said the unquestioning acceptancy of the maize theory was regrettable. The Italian Govern-

ment was spending considerable sums of money for the elucidation and eradication of the disease, but the investigations were limited to a study of the fauna and flora of stored maize. The Prefects of the various provinces attacked by the disease were directed to collect specimens of diseased maize and forward them to the laboratories of the Government Board of Health in Rome, where they were examined and experimented with. He regretted that the disease was not more fully investigated in the field by competent men and independently of any theory. If he were asked to suggest a theory, merely as a working hypothesis, he would be inclined to draw attention to the many analogies between pellagra and some of the protozoal diseases which had been recently worked out. But his reason for bringing the subject before the meeting was not to propound a new theory of pellagra, but to urge the necessity of a thorough investigation of this widely distributed and important disease.

A Communication on a Tropical Skin Disease.

By John Bell, M.R.C.S., M.R.C.P.
Superintendent, Civil Hospital, Hong Kong.

An Indian policeman who had resided nine years in Hong Kong was the subject of a sore on the sole of the right foot, which he ascribed to treading on a nail when walking barefoot. The sore increased to the size of the palm of the hand, circular in shape, with undermined edges, and with a red and irritable centre. Dr. Wm. Hunter found a parasite—*Rhizoglyphus parasiticus*—in the scrapings sent him for examination. This parasite is figured in Max Braun's "*Thierischen Parasiten des menchen.*" The sore healed after treatment with 4 per cent. formalin in glycerine.

Notes on Frambœsia Tropica (Yaws).

By J. Campbell Graham, M.D.
Deli, Sumatra.

Two cases of frambœsia were met with in Europeans by Dr. Graham whilst engaged in practice in Deli, Sumatra. One of the patients was a Dutch girl, aged 4, and the other a German girl, aged 6. In the former case the lesion was observed on the thumb of the left hand, the supra-condyloid gland in the arm became enlarged, and the child looked cachetic. The child's Javanese nurse was found to have a patch of yaws on the breast. In spite of treatment the patient did not improve, until sent for a change to the hills in Penang, and was not quite cured until sent to Europe. The second case was also communicated by a Javanese nurse, the eruption was fairly widely spread, and the child did not completely recover until sent to Europe. Dr. Graham remarked that yaws is common amongst Javanese. If treated with potassium iodide or mercury internally and local applications of sulphate of copper the disease gradually disappears, but it may return after a year or two. Europeans do not recover from yaws as quickly as do natives. Tamils rarely take the disease in Java, and Dr. Graham has never seen a case of yaws in Chinese. He had lately met with success in the treatment of yaws by giving bicarbonate of soda internally, combined with sulphate of copper applications externally.

Notes on Pian (Yaws).

By M. E. Jeanselme, M.D.
Professor, Faculty of Medicine, Paris.

In Cambodia, where the disease is widespread, Jeanselme had an opportunity of studying yaws. He cannot accept Jonathan Hutchinson's suggestion that yaws and syphilis are identical diseases, because in the same part of the world, and among natives of the same race, the two toxins are found simultaneously, each, however, keeping its distinct characters. Charlouis, by inoculating with syphilis an individual who was already suffering from yaws, would appear to have proved the duality of the diseases. Again, although the two diseases are curable by the same drugs, it must be remembered that actinomyces is also cured by iodide of potassium. The prognosis of yaws is favourable as a rule, but it is unfavourable in cases of chronic ulceration, of progressive serpiginous invasion of healthy skin, and where the tissues are undermined as far as the ligaments and bones. Yaws is a highly contagious disease; in Cambodia and Laos it is quite common to see an infant being suckled by a woman whose breasts are covered by yaws. It is possible that infection is caused by insects, as the children, up to four or five, are naked, and their skins are the seat of bites and scratches. In some districts parents anticipate the inevitable attacks of yaws by favouring inoculation in every possible way. The disease is not hereditary. During the first three months of the disease the natives of Cambodia avoid all drugs, but subsequently the patients are subjected to fumigations of mercury while wrapped in mosquito nets. Iodide of potassium in anti-syphilitic doses has a good effect on yaws in two or three months, but whatever the treatment, the disease is apt to recur.

Papers.

By Aldo Castellani, M.D.
Colombo, Ceylon.

I.—Tropical Forms of Pityriasis Versicolor.

In Ceylon two types of pityriasis are met with. (*a*) Pityriasis nigra. In this type the affected parts are black and lustreless; the patches are usually round and desquamating, of various dimensions, and may be found on any part of the body except the face. The fungus shows mycelial threads 18 to 20 μ by 2½ μ; non-branching, and at times irregular in outline, bent, banana-shaped, &c. The spores, frequently seen in clusters, are globular and measure from 5 to 7½ μ. (*b*) Pityriasis versicolor flava. Of this type there are two varieties. One variety attacks the face, neck and upper part of trunk; the patches are yellow, smooth, presenting no desquamation, no itching, and are very difficult to cure. The second variety is generally seen in the arms and legs, the patches are light yellow or nearly white, elevated somewhat, present some desquamation, and are readily cured by the ordinary anti-parasitic remedies. It is not uncommon to find the different types of pityriasis versicolor, nigra and flava on the same individual.

In pityriasis versicolor flava of the first variety the fungus is scanty, the mycelium is thick and irregular in shape, the spores are few and do not run into clusters. In the second variety the mycelium is thin and regular in outline, spores small, oval, and numerous, and may be in clusters.

II.—Observations on Dhobie Itch and other Tropical Trichophytic Diseases.

Castellani, in his investigations of ringworm in Ceylon, has used the ordinary methods, viz., microscopical examination of scales and hair in liquor potassii, staining by various methods, the best being Morris's method modified by Walker, and a maltose agar culture medium. "Dhobie itch" is a term loosely used in the Tropics and denotes almost every known pruriginous skin affection. The fungus found in dhobie itch presents very few mycelial tubes and spores, mycelium segments are almost straight and present a double contour, some branching is observable; spores are oval or rounded and not large; greyish colours, slightly crateriform in shape, developed slowly in maltose agar. The fungus of dhobie itch is a trichophyton of different type to that met with in tinea circinata. The groins, inside of thighs, axillæ and submammary regions are the parts usually attacked by dhobie itch, but tinea circinata affects as a rule the trunk and limbs. The fungus of tinea circinata differs not only from that of dhobie itch, but the Ceylon variety is distinct in many ways from that met with in Europe. The fungus of tinea grows well in cultures producing large acuminated, snow-white, non-powdered colonies; the fungus evidently belongs to the megalosporon type.

Castellani has seen a case of mixed infection of dhobie itch and tinea circinata. Tinea imbricata, caused by the *Trichophyton mansoni*, has not apparently been met with hitherto in Ceylon, but the case of a Ceylon Tamil coolie investigated by Castellani presented symptoms suggesting tinea imbricata.

Ringworm of the scalp is not markedly prevalent in Ceylon, but Castellani has examined three native children suffering from the complaint. The fungus he cultivated from these cases was an example of the megalosporon endothrix type; so far Castellani has not found the *Trichophyton microsporon* (Andouini) in Ceylon.

III.—On the Presence of Spirochætæ in Two Cases of Ulcerated Parangi (Yaws).

Castellani, whilst examining some films from the secretion of a yaws ulcer in February, 1904, noticed several minute and almost invisible spirochæte-like bodies. Since, however, Schaudinn's discovery of a spirochæte in syphilis, the fact that a similar body is present in yaws ulcers attains an importance of great interest, for the well-known contention that clinically yaws and syphilis are allies is brought prominently forward. Of four cases investigated by Castellani two were of the dry yaws stage of the disease and gave negative results, but in the other two cases in the second stage of the disease spirochætæ were plentiful. The spirochætæ found were mixed with numbers of bacteria, stained by the Leishman alcoholic solution for five minutes to which distilled water is then added and allowed to stand for fifteen minutes the spirochætæ of yaws are found to take on a purplish, occasionally a bluish, tint. The organisms measure from 10 to 20 μ in length, pointed at both ends, and present a variable number of waves. Two types seem to exist, one with numerous small waves, the other with fewer, larger and more graceful waves. Castellani, in publishing these details, does not wish in any way to positively assert that the spirochæte stands to yaws in the relation of cause and effect.

Involvement of the Scalp in Leprosy.

By George Pernet, M.R.C.S., L.R.C.P.

Assistant to the Skin Department, University College Hospital, London.

Pernet has seen two cases of leprosy in which the hairy scalp was involved. This is a refutation of the statement generally made that leprosy does not affect the hair of the head. One patient was a native of Bombay who presented himself in 1898 at University College Hospital with nodular leprosy; the other was a patient of Dr. Radcliffe Crocker's, who described the case in the *Lancet*, vol. ii., 1896, p. 364. This woman was also the subject of nodular leprosy. Pernet remarks that he had seen lupus vulgaris attack the scalp in three patients.

Discussion on Papers on Skin Diseases.

H. Radcliffe Crocker, M.D., London, discussed the pathology of elephantiasis arabum and compared it with the cases of elephantiasis met with in this country. The pathology of elephantiasis arabum he did not consider in any satisfactorily explained by the mere obstruction of lymphatics by immature filaria ova. In cases of ringworm the clinical symptoms in most parts of the world seemed in almost complete resemblance, but the type of parasitic infection appeared to vary somewhat. Dr. Crocker had seen a case of granuloma in the groin of a negro who lived in London and had not been in a tropical climate for several years.

Professor Rubert W. Boyce, F.R.S., Liverpool (President), stated that the presence of filaria in the blood does not explain the fibrous changes which are so prominent a feature of elephantiasis. Local elephantiasis in this country seemed to be due to streptococcal infection, and possibly the same factor played a prominent part in elephantiasis arabum.

Major G. H. Fink, I.M.S., London, said that Oriental sore is known under several names in India; in some districts it was known as aurangzebe, because according to tradition the Emperor Aurangzebe suffered from and he became thereby immune to malarial fever. This idea of protection from malaria in those who had contracted Oriental sore was a common belief in parts of India. Major Fink had examined sandflies found in human habitations and found some of them teeming with flagellated organisms; the bites caused by these sandflies when irritated by scratching and otherwise often formed sores which were apt by inexperienced observers to be mistaken for a "specific sore." Major Fink showed photomicrographs of sandflies, and in one photograph flagellated organisms like parasitic cercomonas were apparent.

F. M. Sandwith, M.D., referring to Dr. Sambon's paper on pellagra, said that he did not consider weevils

to be the direct cause of pellagra in man, although it is true that weevils and mould often infect the maize side by side. The weevil penetrating the husk of the grain to form a hole in which to lay her eggs may carry into the grain any spores of fungi there may be on the surface. In this way the fungi might be conveyed to man by the food.

James Cantlie, M.B., London, said that amongst the skin ailments mentioned by the several speakers, he had seen no reference to a patchy pigmentation of the skin of the face, neck, and hands frequently met with in tropical countries, especially amongst women. He had bestowed the name "tropical mask" on this condition, which was a pure pigmentation not due to any parasitic infection, but resembled more closely the pigmentation seen in pregnant women in temperate climates. He had lately shown a case of this nature to Dr. MacLeod, and he also agreed that the condition was non-parasitic. Mr. Cantlie mentioned a case in which the "tropical mask" had led to mistaken diagnosis; a medical man in this country, unfamiliar with the condition, had informed the patient's friends that the pigmentation of the skin in a patient he was treating for intestinal flux was due to Addison's disease, and that all treatment was unavailable. Mr. Cantlie also stated that he had seen small sores on different parts of the body, resembling Oriental sores, in an officer just returned from Thibet.

D. E. Anderson, M.D., Paris, also took part in the discussion.

Karl Grossman, M.D., Liverpool, gave a lantern slide demonstration of coloured photographs he had taken of lepers in Iceland.

Discussion on Sprue and Hill Diarrhœa.

Sprue.

By James Cantlie, M.B., F.R.C.S.
Lecturer, London School of Tropical Medicine.

Since the discussion on sprue held five years ago in the Section of Tropical Diseases it cannot be said our knowledge of the disease has advanced to any marked extent. Many observers had patiently sought for an intestinal organism in the stools of sprue patients, but all results have proved negative to indicate the etiology of the disease; this does not, however, prove the absence of a specific organism in sprue. Mr. Cantlie is inclined to regard liability to sprue to arise primarily from a physiological atrophy of certain of the digestive organs due to the prolonged residence in a hot climate. The organ which clinically shows most alteration is the liver; and in all sprue patients the liver is markedly reduced in bulk. Owing to the loss of functional activity in the liver the contents of the bowel are improperly digested, abnormal organisms develop in the bowels, causing a continuance of the intestinal flux. The frothy, bulky stools indicate a fermentative change, and their pale colour point to the absence of healthy bile. Stomatitis is a common ailment amongst adults, especially women, in South China: an attack from its initiation to its complete disappearance lasts three weeks, and there may be as many as three or four attacks during twelve months. Sprue does not necessarily follow upon these attacks, but they precede the disease, and are a warning that the disease may supervene. Mr. Cantlie is inclined to ascribe stomatitis and the subacute or acute gastro-intestinal indigestion which accompanies it to the use of coarse native oils instead of butter or fat in cooking food. He had only met with sprue in Europeans in South China. In regard to treatment he condemned the milk-treatment of sprue. Milk produced a stool which was solid in a sense, but it was not fæcal. The milk in its passage through the body became separated into curd and whey; the whey was absorbed but the curd was excreted, and gave the apparently solid motion which had neither the appearance nor smell of fæces, and was merely a cheesy mass, the result of precipitation of the solid matters of the milk—fæcal cheese, in fact. Mr. Cantlie had advocated meat-treatment for sprue when the disease was discussed at this Section (Tropical) some five years ago, and since then he had gained fresh experience of its efficiency. If the patient is very weak, meat juice, raw or warmed, might have to be given every five or ten minutes. After a day or so the intervals of feeding are increased, and beef jelly, calves' foot jelly, or plain jelly added. In some four or five days beef (3 to 5 ozs.) pounded in a pestle and mortar, and lightly cooked, could be given thrice daily, in addition to the above. Tea, China tea, held in a strainer above a cup and boiling water poured over it, is the best drink; rice tea, rice roasted in the oven until brown and infused by pouring boiling water upon it (2 tablespoonfuls rice to 1 pint water), is also an agreeable and useful drink. Wet packs (warm at first) applied to the abdomen for two hours, twice daily, are beneficial, accompanied by rest in bed. After a week the patient should be able to eat finely minced beef with or without a poached egg, and a cut of fresh meat from the joint can be given a few days later. Baked bread may be added after the fifth or sixth day, and vegetables such as vegetable marrow, stewed sea-kale, or stewed celery (young), may be added after a week's treatment. The meat-treatment took as many days to cure as the milk took months. Moreover, milk cannot cure, it can merely ameliorate the symptoms, for until the patient can eat ordinary diet he is not cured; stopping diarrhœa is not curing the patient. Of drugs, santonin in the preliminary stages and small doses of castor oil occasionally alone seem to aid the case. Mr. Cantlie had lately seen a case of true sprue develop in a man aged 60, who had lived in England for seven years, continuously, after leaving China. He had lately by meat-treatment treated two patients over 60 years of age successfully. A mixed diet of milk and meat was the worst form of alimentation in sprue. Strawberries (3 or 4 lbs. daily) combined with meat is more efficient than meat alone. Other fruits will no doubt be found to take the place of strawberries in the treatment of sprue, but at present none are known. No doubt sprue is scorbutic in its nature, and fresh meats, fresh fruits, fresh vegetables, are potent agents in the cure of the disease.

Hill Diarrhœa.

By Andrew Duncan, M.D., B.S.Lond., F.R.C.S., M.R.C.P.
Lecturer on Tropical Medicine at the London School of Tropical Medicine and the Westminster Hospital Medical School.

In hill diarrhœa the patient is attacked with a usually painless, but occasionally painful, purging, which sets in some time between 3 and 5 a.m. The motion

is copious, liquid, watery or pasty, and has been well compared to recently stirred whitewash. From one to six motions are passed up to about 11 a.m., when the purging ceases. There is great concomitant flatulence. During the remainder of the day the patient is free from the affection; but it recurs the next day, and so on, until liquid stools commence to appear in the evening. The patient at first thinks but lightly of the affection, but as it advances appetite is lost, the tongue becomes more furred, and now he feels faint after the stools. The latter increase in frequency, and emaciation sets in, until, if unchecked, death occurs from exhaustion. As regards the excreta, no bile is found in the stools; the urine is usually natural throughout.

As regards the etiology of hill diarrhœa, Colonel Crombie, I.M.S., holds that it is due "to the presence in the digestive tract of some organism which multiples there, devours the colouring matter of the bile, and perhaps other constituents, and so allows of rapid fermentative changes in the intestinal contents."

Lieut.-Colonel Dyson, I.M.S., points out that hill diarrhœa occurs in those hill resorts where the geological formation contains schist. In hill stations resting on sandstone, he says, the disease does not occur. The mica suspended in the water in districts where schist obtains causes a gastro-intestinal irritation, which results in hill diarrhœa. At Darjeeling the disease disappeared after the drinking water was carefully filtered. Dyson's theory seems to offer the best explanation so far of hill diarrhœa. Elevation does not seem to be a factor in the production of the disease, as in other mountainous districts of the world the complaint does not exist. Hill diarrhœa and sprue seem in no way related.

Treatment.—Colonel Crombie advises the method originally brought forward by Macpherson and Bary, viz., in *mild* cases: 12-15 grains of pepsin, ingluvin or lactopeptin are given two hours after food, which must be of milk. In *severe* cases, 5 ozs. of peptonised milk are given every two hours day and night, and also drachm doses of liquor hydrargyri perchloridi fifteen minutes after a meal. This will, as a rule, arrest the disease in three days, but some days must elapse before the colour in the motions is restored. There should also be absolute rest in bed. If, however, in spite of all treatment, the disease persists, the patient must take leave to England.

The subjects of Sprue and Hill Diarrhœa were discussed by:—

L. W. Sambon, M.D., considered that in sprue everything pointed to the presence of a specific micro-organism. The fact that sprue might develop in persons who had left the Tropics for a considerable time was not against the idea of a specific germ being the etiological factor. Blackwater fever, sleeping sickness, hydrophobia, leprosy and many other diseases might likewise manifest themselves for the first time in Europe several months or even years after their respective endemic areas had been left. The length of the period of incubation or latency depended on various causes in the different cases. The most important factors were numerical strength and virulence of the parasite, resisting power of the host, location of the parasite, transference from one anatomical region to another, and above all, association with other organisms.

David J. Galloway, M.D., Singapore, agreed with Dr. Sambon that sprue seemed to be due to a micro-organism. He could instance cases in which members of a family seemed to infect each other with sprue. He objected to the term "sore tongue," as the tongue is frequently affected without pain. Anæmia was a marked feature of sprue, the red blood corpuscle count being as low as 1,500,000 at times, whilst the hæmoglobin remained high. He considered milk useful in sprue, and thought that the no-drug treatment of the disease was overdone. Intestinal antiseptics were useful, and calomel, given according to Bouchard's plan, most efficient. Dr. Galloway also described several subsidiary symptoms of sprue amongst other hyper-peristalsis.

F. O. Stedman, M.D., Hong Kong, regards milk as a valuable agent in the treatment of sprue, especially when some intestinal antiseptic such as beta-naphthol was combined with the milk treatment. In regard to hill diarrhœa and its relation to mica in the drinking water, he had observed in Hong Kong that after the first heavy rains diarrhœa seemed to prevail, and he had noticed that the water at that time became slightly opalescent from minute suspended (*mica*) particles. He had never seen sprue attack Chinese in Hong Kong.

John Campbell Graham, M.D., Deli, Sumatra, stated that true sprue is not common in Deli, Sumatra. It was customary to call all cases of stomatitis sprue in Sumatra, and it was important to differentiate between these and true sprue, in which the characteristic intestinal manifestations were present.

Dr. Graham read an abstract from a paper on sprue by Dr. A. Van der Scheer, which he translated from the original Dutch text. Van der Scheer holds that there exists a casual relationship between marked or chronic appendicitis and sprue, and proposes to treat the disease by removal of the appendix.

A. J. Chalmers, M.D., Ceylon, considers that cases of sprue are rarer now in Ceylon than they used to be. He regards the liver as the organ essentially at fault. He had found good results from liver soup, a plan of treatment followed in Ceylon by the natives. Liver soup, with or without intestinal disinfectants, had given excellent results.

Major G. H. Fink, I.M.S., London, found in India that sterilised milk was eminently successful in the treatment of sprue. He was inclined to believe that the mica theory of the origin of sprue was the correct one, and was well aware of the difficulty in treating hill diarrhœa until the water was changed. He heartily subscribed to a remark made by Dr. Sambon that it would advance our therapeutic knowledge greatly were more attention given to native cures and to the drugs by which these cures were effected.

C. F. Harford, M.D., Livingstone College, London, said that tropical diarrhœa was the cause of a great amount of invaliding in warm countries. Some 500 missionaries, returning home after an absence of variable periods in the Tropics, all agreed that diarrhœa was the most frequent and the most serious cause of ill-health in the Tropics and sub-tropics. The pathology of intestinal tropical ailments was but ill understood and required to be scientifically dealt with in the immediate future if we hoped to reduce the enormous amount of invaliding which occurs amongst Europeans in warm climates.

JOHN HADDON, M.D., Berwick, advocated vegetarian diet in the treatment of intestinal ailments; he is of opinion that were a rigid vegetarian diet followed by Europeans in the Tropics intestinal ailments would be fewer.

J. H. EBELL, L.R.C.P., Colombo, Ceylon, said he was well acquainted with the treatment of sprue by liver soup in Ceylon and could testify to its efficacy. An old native treatment followed in Ceylon also was the administration of "toddy," made from the fermented juice of the cocoa-nut palm.

W. L. STRAIN, M.B., San Paulo, Brazil, stated that during twenty years' residence in Brazil he had no recollection of diagnosing a case of sprue. Diarrhœa is very prevalent amongst new-comers. Although San Paulo is inland and 2,700 feet above sea-level, he had never attributed the diarrhœa to elevation *per se*. Dr. Strain had found ox-bile efficacious in the treatment of diarrhœa in Brazil, and it was customary amongst residents in San Paulo to take ox-bile pills obtained from Erba in Milan.

Lieut.-Col. ANDREW DUNCAN said that he had found milk beneficial in sprue, but he found the meat-treatment efficacious in cases which milk did not cure.

JOHN HUTSON, M.B., Barbadoes, finds that in Barbadoes the disease termed locally thrush is really sprue. Curiously enough, pellagra complicated the disease in the West Indies. In many tropical regions fresh meat was difficult to get, and it was usually of very inferior quality. He had successfully treated sprue on a pure banana diet for three or four weeks with marked benefit. Corrosive sublimate in minute doses was frequently efficacious.

ON THE PRESENT THEORIES OF THE CAUSE OF BERI-BERI.

By J. TERTIUS CLARKE, L.R.C.P.

Perak, Malay Peninsula.

Dr. Clarke arranged the theories recently advanced as causes of beri-beri under four headings:—

(1) The arsenical theory of Ross has in support of its claims to consideration the similarity of the symptoms in beri-beri and chronic arsenical poison, and the fact that in some cases of beri-beri arsenic was found in the hair and under the toe-nails. In addition to several points of differentiation, the neuritis of beri-beri is chiefly parenchymatous, whilst that due to arsenic is mainly interstitial.

(2) The rice theory has its main support in the fact that Tamils are almost completely immune from the disease in a country where beri-beri is rife. The Tamils subject their rice before husking to a preliminary boiling, while the other races husk their rice raw, and so it may become contaminated by the poison which lies in the husk. Moreover, the Tamils take spices, curries, and essential oils with their food, which may serve as prophylactics against possibly infected rice.

(3) The place theory supposes that the virus exists in certain houses, ships, barracks, or amongst certain gangs of coolies.

(4) The theory of Hamilton Wright is that beri-beri is an acute infectious disease, having a definite primary lesion in the stomach and small intestine, and that the causal organism may be ingested in any food or drink accidentally contaminated, and may multiply and produce a toxin both in the contents and walls of the affected stomach and small intestine. Dr. Clarke instanced two institutions some 300 yards apart, one a hospital, the other an occasional vagrant ward. They were supplied with food from the same kitchen and by the same carriers. Beri-beri cases were admitted into both institutions, but in the hospital, although the more sanitary building, beri-beri spread to other inmates, and the majority died; yet in the vagrant ward the disease did not spread, and few died. The disease would seem capable of infecting a 'place,' may disappear from that place, and disinfection may apparently prevent further cases arising. Ward attendants rarely develop the disease, but Dr. Clarke mentions the case of a man who acted as ward attendant on beri-beri patients for nine years in a hospital, yet never contracted the disease until he went to work in the mines. Dr. Clarke surmised that the bed-bug might be the carrier of the disease, and experimented on monkeys, allowing bed-bugs from beri-beri patients' beds to bite the monkeys, but the result proved negative, as also did the experiment of crushing up some twenty bugs in water and injecting the preparation under the monkeys' skin. Dr. Clarke also injected 4 or 5 drachms of cerebro-spinal fluid taken from beri-beri patients into monkeys, but observed only slight paralytic effects in one monkey.

HAMILTON WRIGHT, M.D., late Federated Malay States, said: "In previous papers on the subject of beri-beri I endeavoured to show that the incubation period of the disease is short—from seven to fourteen days; that it is an acute or subacute infectious disease, due to a specific organism not yet certainly determined; that the organism is not one whose special *habitat* is any food such as fish or rice, but one that may nevertheless be ingested in any food and drink accidentally contaminated; that, after gaining an entrance to the alimentary canal, the organism multiplies in the contents of the stomach and small gut, but chiefly in the contents of the duodenum; that it there elaborates a toxin which, being absorbed, poisons certain afferent and efferent neurones to different extents and in different degrees, and thus gives rise to a group of symptoms which can be classified as acute pernicious, acute and subacute beri-beri. I pointed out that the probable duration of the active stage of the organism was from two to six weeks, and that after its active stage had ceased and its virus had been eliminated, the paresis or paralysis it had engendered persisted. For this persistent paralysis I proposed the term *beri-beric residual paralysis*. I maintained that the great mass of our knowledge of beri-beri was founded on the study and statistics of the residual effect of a disease—beri-beric residual paralysis—and not truly upon the disease itself, acute pernicious, acute and subacute beri-beri. It then seemed evident to me that we should be just as clear in our conceptions of diphtheria if we had based our calculations of it on post diphtheritic paralysis, as we are in our notions of beri-beri through basing our theories and hypotheses of it on its residual paralysis.

"In those previous papers I not only outlined my

clinical and *post-mortem* observations on man; but gave a fuller description of the disease as seen in monkeys which had contracted the disease after a short stay in an environment in which many adult male Chinese and other Orientals had succumbed.

"In my writings I have endeavoured to make it clear that there is not only clinical evidence, but also indisputable *post-mortem* evidence, that beri-beri must be regarded as an acute infectious disease, having a definite primary lesion. I have not by any means exhausted the subject either from a clinical or pathological point of view. It is not yet time for a finished monograph of the disease. Our present conception of beri-beri is more or less disordered."

David J. Galloway, M.D., Singapore, said that although most writers on beri-beri differed in their ideas as to the causation of the disease, they all seemed to gravitate to the question of alimentation. Attempts to explain the incidence of beri-beri by the diet seems futile. Dr. Galloway had observed that an early symptom of beri-beri was epigastric pain, anorexia, diarrhœa, dulness and rigidity over the epigastrium, pain over the duodenum, and a peculiar condition of the mouth. These signs and symptoms preceded localised œdema or neuritis by some ten or fifteen days. The habits of expectoration amongst the Chinese may be a factor in the spread of infection of beri-beri, and the house-fly may serve as a carrier.

W. L. Strain, M.B., San Paulo, Brazil, stated that he had seen three sporadic cases of beri-beri occurring in women after childbirth in Brazil. Although sporadic cases of the disease were not rare in Brazil, he had only seen one small epidemic in a goal. The native surgeon treated the cases with large draughts of cow's urine, which he regarded as a potent diuretic.

Malarial Fever in British Central Africa.

By H. Hearsey, M.D.

Principal Medical Officer, British Central Africa.

Two forms of malarial infection are met with in British Central Africa, the tertian and the æstivo-autumnal. Tertian fever is by far the more common, and it frequently takes the type of a double infection. Multiple infection by tertian parasites is met with, causing the so-called irregular fever, and is the only variety of the fever, which is generally resistant to quinine. Dr. Hearsey is inclined to regard hæmoglobinuric fever as a "pernicious" form of the æstivo-autumnal, the absence of the parasites in the peripheral circulation being probably due to their having left the peripheral circulation for the spleen and bone-marrow.

In regard to treatment, Dr. Hearsey says experience has taught him that patients with hæmoglobinuric fever do better without quinine. He has used instead, with beneficial results, a mixture of 10 grains of bicarbonate of soda and 30 minims of the solution of perchloride of mercury, given every two hours during the first day, and every three hours during succeeding days until the urine clears. An injection of ½ grain morphia controls vomiting; brandy is indicated, acid drinks are prohibited; barley water, Benger's food, chicken soup, Valentine's meat juice, and Brand's essences should be the diet.

Note on the Method of Taking Quinine in the Prophylaxis of Malaria.

By St. George Gray, M.B., B.Ch.

West African Medical Staff, Sierra Leone.

Few European residents in West Africa agree as to the method of taking quinine as a prophylactic in malaria. A man who takes 5 grains of quinine daily is pretty sure to escape malarial fever. This is, however, a large dose, and more than most men can stand. Three grains daily is often too much to be taken with impunity; yet it does not always prevent malaria. A man who takes 10 grains once a week is more likely to escape fever than he who takes 5 grains every other day. Dr. Gray bases his recommendations as to the taking of quinine on the fact that the life-cycle of the parasite is nearly always forty-eight hours, and that some eight or ten days must elapse after infection before the parasites become sufficiently numerous in the blood to cause an attack of fever. If, then, a 10 or 15-grain dose of quinine is taken on two successive days, with an interval of eight or nine days before the next two doses are taken, the parasites will always be destroyed before they can cause fever. It is advisable to explain to patients the reasons for the quinine being given at the time it is.

The Mosquito Malarial Theory and Malarial Prophylaxis from the Latent Phase.

By Major G. H. Fink, I.M.S. (retired).

Major Fink drew attention to the *constant* source of malarial fever in tropical regions as opposed to the *accidental*, as he terms it, through the bites of a particular species of mosquito called the Anopheles. Major Ronald Ross, in dealing with the subject, states that the bite transmits the infection through letting loose or injecting the malarial parasite through the proboscis of the insect into the blood of man. Major Fink does not consider that the constant source of malarial fever lies in the bite of the mosquito, while, even as an accidental cause, it occurs in perhaps 5 to 10 per cent. cases by the mere bite and nothing else. Major Fink maintains that there is a constant source of malarial fever, apart from the bites of mosquitoes, and in the accidental infection there is not so much danger from the mere bite of mosquitoes as the destruction or killing of the mosquito over the spot it has bitten man, through which the malarial blood obtained from a malarial patient previously is smeared over the bite, and this infects man by the same process as vaccination by scarification and rubbing in of vaccine lymph. The most constant source of malarial fever is through the phase known as the latent phase, which by all authorities is acknowledged to be present, but not yet demonstrated.

Malaria, in uninhabited or supposed uninhabited malarial regions, waits in its latent phase until man's presence and the introduction of the parasite in his blood occurs, which is the favourable opportunity. Even if a region be said to be *free* from malaria, because of the *absence* of the Anopheles mosquito at the time, the forces of Nature bear the parasite through water and wind to any direction, when storms and inundations occur. Supposed uninhabited regions in the Tropics are found to have been inhabited in bygone years. "I am in a position to prove my point

from archæological remains discovered in what we considered virgin forests, which clearly show a high degree of civilisation in those forests at one time, and the story of malaria is therefore an old story, though not explained by those who have hitherto investigated it; hence we can realise now that the turning up of fresh jungle land and the construction of railways by new cuttings in the Tropics is sufficiently and scientifically explained by me in the life-history of the sporozoa in its hosts (man and mosquitoes), as well as in the latent phase in the dust and water, which phase reaches man's body, through worms and their ova in the dust which bears the parasite in its 'free parasitic stage,' which is almost indefinitely maintained. We cannot believe that the more *constant source* of malaria is any other than what I have here stated in connection with the latent phase from what most observers in the Tropics have noted for years in malarial attacks, whereas the bites of the mosquito produce the accidental or chance infection. By drinking water and the dust which gets into the water in the Tropics we have a far greater chance of taking in the malarial parasite than through the bites of the mosquito merely as described by Ross and others. But wherever malarial fever prevails largely, there entozoa and skin diseases are prevalent in undue proportion as compared with other diseases, so that ectozoa and entozoa, but chiefly the latter, convey the malarial parasite for the process by schizogony into man's blood, and before that process can be fully carried out and maintained for an attack of malarial fever, there must be anæmia and hydræmia, which are conditions necessary for further attacks of the parasite on the red blood corpuscles, and which occur at the time the 'primitive bodies' are introduced. The intermittent, remittent, and cachexial forms of malaria depend upon the species of mosquito or sandfly. In moist, clayey soils, where rice-fields and swamps abound, it is the Anopheles; but in dry, sandy soil, with very little swamp, where wheat-fields occur, it is the sandfly. In Bengal and the junction of Bengal with the North-West Provinces of Oudh, the former conditions exist, and the intermittent forms of malarial fever prevail; but in the North-West Provinces in Oudh itself, and its junction with the Punjab in Sinjh, the latter, with remittent forms, exist."

Note on Two Cases of Beri-beri Treated with Strychnine Injections.

By R. Tanner Hewlett, M.D., M.R.C.P.
Lecturer on Bacteriology, London School of Tropical Medicine; Professor of General Pathology and Bacteriology, King's College, London.

A Norwegian seaman contracted beri-beri whilst on a voyage from the West Indies to London. The acute symptoms subsided, but he was left with considerable difficulty in walking. Strychnine, arsenic, and iron were given, and galvanism applied to the leg for some three weeks without marked improvement. When, however, $\frac{1}{50}$ grain of strychnine was injected twice daily alternately into each thigh—*i.e.*, each thigh received one injection daily—in a week's time the patient could walk fairly well, and in two weeks' time completely recovered. Dr. Hewlett reported similar treatment in the case of a German sailor who had beri-beri paresis for some nine months. Injections of $\frac{1}{50}$ grain of strychnine enabled the patient, who was bed-ridden, to walk with a stick in six weeks' time.

Blood Counts in Acute Hepatitis and Amœbic Abscess of the Liver, with Further Experience of the Relationship of the Amœba Dysenterica to Tropical Liver Abscess.

By Leonard Rogers, Captain, I.M.S.

Rogers has found blood counts, especially with regard to the presence or absence of leucocytosis, of great diagnostic value. There is a striking difference between cases of hepatitis ending in resolution and cases of hepatitis ending in suppuration. In the former, leucocytosis is either absent or limited to a very slight degree; in the latter, even when the signs and symptoms of abscess were quite indefinite, a greater or less degree of leucocytosis was almost uniformly present. In cases in which abscess was evidently present, leucocytosis was also, as a rule, present.

In acute hepatitis with suppuration, Case 1 gave the following counts: Red corpuscles, 5,390,000; white corpuscles, 11,500—that is, of white to red, 1 to 468; polynuclears, 73; lymphocytes, 23; large mononuclears, 4. In cases of liver abscess the count (Case 6) showed: Red corpuscles, 2,670,000; white corpuscles, 13,250—ratio of white to red, 1 to 201; polynuclears, 68; lymphocytes, 20; large mononuclears, 12.

There is great variability in the degree of leucocytosis present, but in all cases of hepatitis leucocytosis should be carefully watched for, and the proportion of white to red corpuscles, rather than the actual number of either, taken as the crucial test. In the cases related Rogers instanced one in which leucocytosis was marked, but the fall of the temperature to normal seemed to indicate the absence of pus, but a relapse occurred, and a large abscess was opened. Another case, a patient with fever and a blood count which indicated pus, was treated for malaria and sent on a sea voyage; the leucocytosis in this case also proved to be diagnostic, as the patient developed a liver abscess on the sea voyage.

From a clinical point of view, a case recorded by Rogers is very interesting; it is that of a patient with cœliac aneurysm with leucocytosis which simulated liver abscess. The lesson to be learned therefrom is that even with local signs of hepatic trouble other causes of leucocytosis ought to be excluded before concluding that the hepatic lesion is the cause of the leucocytosis.

Rogers' conclusions are: (1) Absolute leucocytosis is nearly always found in amœbic abscess of the liver, but rarely in chronic cases with marked anæmia when only a relative leucocytosis may exist; (2) the degree of leucocytosis is very variable, being highest in the most acute cases, while a low degree is commonly met with in cases with an insidious onset, in which repeated examinations may be necessary; (3) in acute hepatitis without suppuration, leucocytosis, both absolute and relative, is nearly always absent; a slight degree may sometimes be met with in the more acute cases, but the symptoms usually yield rapidly to large doses of ipecacuanha if no suppuration is present.

Further Experience on the Relationship of the Amœba Dysenterica to Tropical Abscess of the Liver.

By Leonard Rogers, Captain, I.M.S.

In a series of thirty-five consecutive cases of liver abscess, reported at the Section of Tropical Diseases at the British Medical Association three years ago, Capt. Rogers stated that he had been able to find living amœbæ either during life or *post mortem*, two-thirds of which were otherwise sterile. He has continued his investigations in this direction, and his subsequent observations tend to confirm the constant presence of amœbæ in liver abscess associated with amœbic dysentery. He gives details of a case in which no amœbæ were found, but he believes the age of the abscess and its thick fibrous wall serve to explain their absence. Rogers also mentions a case of triple tropical abscess of the liver with amœbæ in only two of them in a patient who had suffered from chronic amœbic dysentery.

Cases of Liver Abscess, July, 1904, to July, 1905.

By James Cantlie, F.R.C.S.

Seven Cases of Hepatic Abscess, July, 1904-1905.

Mr. Cantlie reported three cases of liver abscess which he had operated upon successfully by the trocar and cannula and syphon drainage. One patient came from Brazil, another from India, and another from Mexico. Two of the patients developed the abscess whilst in England, the third on the way home from India. In one the abscess was deep-seated and suprahepatic, the needle reaching pus at a depth of 4 inches from the surface on the dome of the liver; in another the abscess was close below the surface (intrahepatic) of the chest wall, and contained some 3½ pints of pus; in the third case the pus (intrahepatic) had opened into a bronchus, and was being coughed up; the tract was reached 6 inches from the surface along the side of the pericardium. A fatal case of abscess of the liver was described by Mr. Cantlie in a man from India who had been invalided home on account of hepatitis, but who did not show signs of abscess until he had resided in England some weeks. The pus (a small quantity) was found 4 inches from the surface, only a few days after the abscess had been diagnosed by Mr. George Morgan, F.R.C.S., of Brighton. Satisfactorily drainage was re-established, but the patient died suddenly on the sixth day after operation, when the right side of the liver was found to be gangrenous. The drainage tube was found to be in the abscess cavity in the upper part of the liver; but there were two or more other foci of pus on the right side of the liver. Mr. Cantlie stated that gangrene of one half of the liver was a unique condition in his experience.

Mr. Cantlie had also operated upon two cases of hepatic abscess at a period when the pus had invaded the lower lobe of the right lung and destroyed it. Both cases died, although the cavity in the base of the right thorax had been freely opened and the abscess cavity packed. A case of abscess of the liver in a man who had never been out of England was related by Mr. Cantlie. In this case alone were other organisms than amœbæ found. Streptococci were present in abundance, and the whole history of the case seems to indicate pyæmia as the cause of the abscess. At the moment of writing the patient was doing well.

Note on a Peculiar Schistosomum Egg.

By S. R. Christophers, M.B., I.M.S., and J. W. W. Stephens, M.D., Lecturer, Liverpool School of Tropical Medicine.

The eggs were met with in the urine of a native of Madras suffering from hæmaturia. The egg differed from that of the *Schistosomum hæmatobium*, inasmuch as it was of a long spindle shape, and from the thick end of the egg a long, snout-like process projected. The egg measured 205·2 μ by 53·2 μ, being therefore longer than other schistosoma eggs. In the urine there occurred also eggs indistinguishable from that of *S. hæmatabium*, so that the significance of the spindle-shaped variety is uncertain.

Two Further Cases of Snake-bite Successfully Treated by Local Applications of Permanganate of Potassium, with Suggestions for Extension of its Use.

By Leonard Rogers, Captain, I.M.S.

In February, 1905, in the *Indian Medical Gazette*, Rogers placed on record five recoveries from snake-bites from treatment by permanganate of potassium applied locally, after incisions through the fang marks had been made. He now adds several cases successfully treated by patients' relatives; one was that of a bite of a Russell's viper, a ligature was applied on the proximal side of the bite, the wound was sucked, then lanced freely, and the part (the arm) soaked in a strong solution of permanganate of potassium for half an hour. Another case, bite from a cobra, was successfully treated with the snake lancet after half an hour had elapsed. Capt. Rogers suggests that scorpion-stings, wounds inflicted by wild animals, by rabid or supposed rabid animals and even in the prevention of infection of dust-laden wounds by tetanus, permanganate of potassium in crystals, in strong solution or hypodermically, should be tried as a routine method of treatment.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the Journal of Tropical Medicine *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Therapeutic Gazette," April 13, 1905.

Yellow Fever. Fernandez de Ybarra.

The best way to manage a case is simply by careful nursing and strict attention to the individual symptoms present. As this justly dreaded malady is self-limited, its course cannot be arrested by any drug or combination of drugs whatever. No "heroic" or even too active medication, therefore, should be employed. Every case ought to be regarded as serious, no matter how slight the symptoms may appear, and on account of the great structural alterations which are going on in the blood and visceral organs the closest medical attention and the most judicious nursing are required.

In those parts of the Western Hemisphere where yellow fever is known as a common disease owing to its constant appearance for a great number of years, the standard initiatory treatment is always a cathartic of some kind. The majority of the older practitioners in those localities give a full dose of oleum ricini: some add the juice of a ripe lemon mixed up with the oil, or give 30 grammes of sulphate of sodium (one ounce).

The recognition of this disease, speaking in general terms, is easy. Whenever, during summer weather, we are called to see a patient suddenly taken sick with one paroxysm of cold or chilliness (which occurs eight times out of ten when the sun has disappeared from the horizon), followed by a rapidly rising fever (102°, 103°, 104° F.), and accompanied by headache, pain in the back and lower limbs; the face flushed with an anxious expression, and the eyes injected and watery; hurried breathing; the stomach very irritable, with great epigastric discomfort and tenderness on pressure, nausea, and anorexia; the tongue moist, slightly coated, sometimes red at the tip and edges, yet otherwise natural; bowels constipated, and in some cases gurgling in the right iliac fossa; lessened quantity of urine, darker than naturally in colour, and albuminous; general muscular debility; pulse rapid, strong, tense, sometimes dicrotic, with from 90 to 120 pulsations to the minute; skin hot, dry and harsh, and if not all these characteristic symptoms, at least the great majority of them, without a previous history of yellow fever, then we may unhesitatingly pronounce the disease yellow fever in its incipiency.

In a case calling for the prompt abatement of the temperature and for a nervous sedative, in the new antipyretics we have nowadays at our command several remedial agents, almost any one of which is far better for that purpose than quinine. Aconite, digitalis, and veratrine, in small doses, are also superior to quinine for the same object.

Jaborandi acts in a doubly beneficial way, for it not only promotes perspiration, and thereby elimination of the yellow fever poison through the skin, but also relieves the congestion of the kidneys. I prefer to use the infusion of the leaves, administered hot, to the hypodermic injection of pilocarpine, though when the leaves obtainable are too old I also make use of the alkaloid subcutaneously.

The great desideratum in the treatment of yellow fever is not to disturb the stomach, and to relieve the congestion of the kidneys.

Of baths of all kinds, the only appropriate one is the hot mustard foot-bath at the beginning of the attack. It relieves the cerebral congestion and headache then existing, and often induces free perspiration, followed by sleep. Mustard plasters over the epigastrium ease the distress, and sense of weight or pain in the stomach.

Diaphoresis and diuresis may be promoted also by large draughts of lemonade made with seltzer water, hot decoction of orange leaves sweetened to taste, or by simple Vichy or soda water. Another means of at once relieving the renal congestion is by a rectal injection of fresh water; the kidneys are thus refreshed and their congestion immediately improved.

Stimulants should not be given at all, with the only exception, perhaps, in some cases in which the patient has been in the habit of using them, of iced champagne.

When the pulsations of the heart have fallen to 50 to 60 per minute, there are several cardiac stimulants at our disposal far superior to alcohol in these cases. A favourite one for this purpose is digitalis.

T. P. B.

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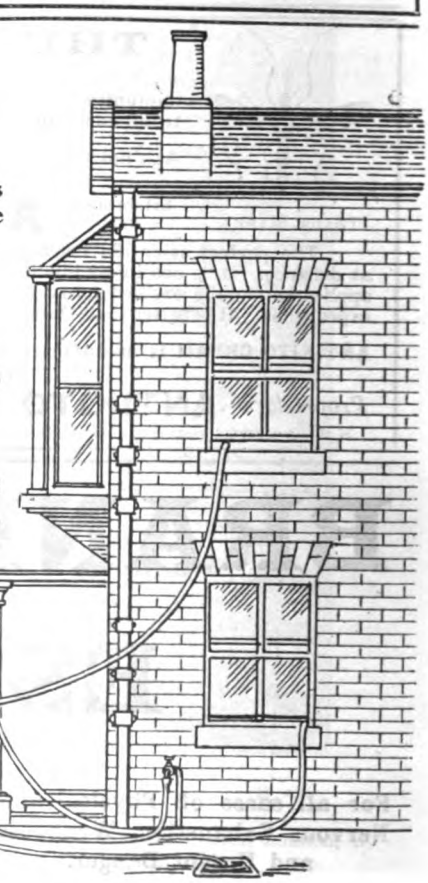
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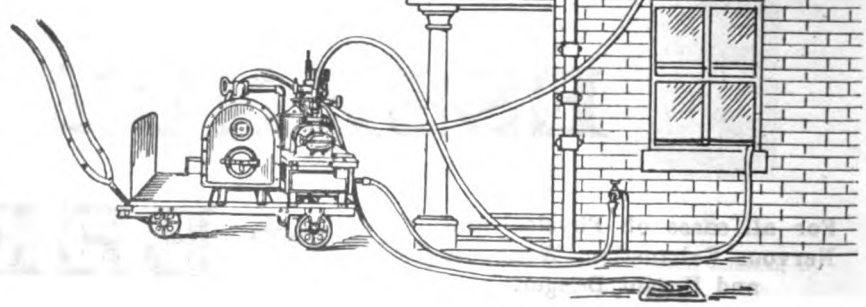


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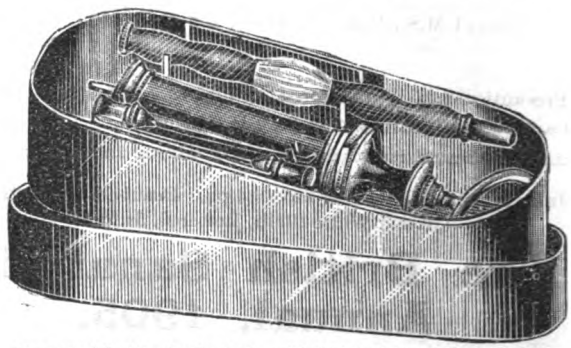
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Original Communications.

NOTES ON UNCINARIA AND OTHER INTESTINAL PARASITES IN THE WEST INDIES.

By C. W. Branch M.B., C.M.(Edin.).
St. Vincent, W.I.

From an old book, "On the Management of Negro Slaves," by an anonymous writer who was apparently a doctor and planter, I extracted the following:—

"The Mal d'estomach, or Dirt-eating.

"When a negro is languid and listless, and so much indisposed to motion as to require to be impelled to it by threats, when he is short-breathed and unable to ascend a hill without stopping, his efforts for that purpose being accompanied with a throbbing of the temples and a violent palpitation of the heart; when he complains of giddiness, his lips being pale, and his tongue white, you may know him to labour under that disorder which the French call the *mal d'estomach*, and the English after them by the same name, or 'dirt-eating,' from the propensity which there is in that case to eat chalk, or clay, or some other kind of dirty substance. . . . . "

"This disorder, which, as I before observed, is very common on the West India estates, is also one of the most obstinate and troublesome that negroes are afflicted with. It disables them from effective labour for a considerable time, sometimes for years, and often terminates in dropsy."

Here we have, perhaps, the earliest description of Uncinariasis, and no better picture has been drawn by later writers.

The author's treatment was 30 grs. of powdered ipecac. at night, followed next morning by a dose of castor oil. No doubt he must have secured the expulsion of some of the worms by the emetic. He then gave an electuary of iron filings washed down by a "bitter infusion" twice a day. The latter consisted of aloes and bitter-ash (simaruba) in rum and water. A generous diet and graduated exercise assisted in the recovery.

The treatment was sound and practical, though the drugs were crude and he had no knowledge of the causation of the disease.

The pathology he describes as a condition of "relaxation and its natural concomitant, an impoverished state of the blood."

The cause he ascribed to poor feeding and mental depression.

About 1892 (I speak from memory) Dr. J. Conyers, of British Guiana, contributed an important paper on "Anchylostomiasis" to the *British Guiana Medical Journal*. Soon after this Dr. Galgey reported the prevalence of this disease among coolies in St. Lucia. In 1894 the writer found the worm in St. Kitts, where the disease had long been distinguished as a pathological entity of unknown cause, under the name of "Portuguese white liver." It was considered an incurable anæmia producing fatty degeneration of the liver.

Uncinariasis has for some years been well known as such in Barbados, though from my observations there it does not receive the systematic recognition that it deserves.

In 1899 Dr. MacDonald discovered the worm in Antigua, and I then drew his attention to the pigmentation of the tongue, a feature pointed out to me in St. Lucia by Galgey, and since discussed by Leonard.

In 1900 I treated a case of uncinariasis in Inagua, Bahamas, which had been infected at Bluefields, Nicaragua.

On my arrival in St. Vincent in 1902, I found such a prevalence of uncinaria as I had never seen or heard of elsewhere. I reported this condition in the hospital report for that year published in "Colonial Reprints," but have since tried to ascertain more exactly the degree of infection of the population.

In 1904, Dr. Leonard, who had made himself familiar with uncinaria in St. Vincent, went to Grenada and proved its remarkable prevalence there also. The disease had been previously recognised and a few cases treated, but Leonard drew attention to its real importance in Grenada.

In 1905, while on a visit to St. Croix, I satisfied myself of the occurrence of uncinaria there also, though no opportunity of microscopic search was available. There were, I was given to understand, no microscopes at the hospitals, but no doubt the Danish medical men, who were very interested in the subject, have by this confirmed my opinion.

The results of the Porto Rico Commission will be historic.

Even from these few records which have come within the writer's knowledge, it is certain that uncinaria has long existed, and must now be exceedingly prevalent throughout the West Indies. In some places it is still apparently overlooked, and in others its prevalence and importance is not fully appreciated.

Other Intestinal Parasites.

In the course of examinations of fæces in St. Vincent other intestinal parasites have been observed whose occurrence is worth recording. Several times as many as five parasites were found in the same individual.

Notes were kept of 414 cases; of these 298 were examined especially for uncinaria, and this series will not give a fair ratio for this worm, though it will indicate the incidence of the other parasites; 116 hospital and dispensary patients of the labouring class, taken at random, were examined in order to determine the percentage of uncinarial infection.

In 116 cases:—

Uncinaria ...	77	equal to 66 per cent.
Ascaris	71	
Trichocephalus ...	45	
Rhabdonema ...	11	
Oxyuris	4	
Nil	7	equal to 6 per cent.

Two-thirds of the labouring class of the island are therefore infected more or less with uncinaria. Only 6 per cent. harbour no worms.

In 414 cases:—

Uncinaria	... 340		
Ascaris...	... 232	equal to 56	per cent.
Trichocephalus	220	,, 53	,,
Rhabdonema	... 47	,, 11	,,
Oxyuris	... 6		
Cercomonas	... 2		
Amœba	... 2		
Balantidium	... 2		
Nil	 14		

Besides these have been seen *Tænia solium*, *Bothriocephalus latus*, and *Myiasis* of the rectum.

One remarkable case, a child brought into hospital almost moribund with dropsy and anæmia, was successfully treated, though stocked with tænia, uncinaria, ascaris, and rhabdonema.

Rhabdonema received but scant attention from some authors on tropical medicine, though Sonsino, in Davidson's "Diseases of Warm Climates," attributes to its presence a chronic diarrhœa.

From one's own experience, the writer is convinced of the soundness of this view. A mild infection is comparatively common without symptoms, but every case with numerous embryos in the fæces is very ill. I have seen some cases of pure rhabdonema infection not complicated with uncinaria, and I have seen three cases die of rhabdonemiasis, one some little while after he had been cleansed of uncinaria for the second time.

In rhabdonemiasis there is a light brown fluid stool of very offensive smell. The diarrhœa is worse at night; it recurs frequently during, it may be, several years. At length, when the cases are bad, they have anasarca of the legs and scrotum, and perhaps also of the lower part of the abdomen and buttocks. There is not the tendency to general dropsy seen in advanced cases of uncinaria.

Unfortunately we have no means of expelling this worm. In my experience it survives attacks with thymol, turpentine, male-fern, and santonin. Dried papaw seed up to 40 grs. three times a day has been tried, and cow-itch (*Mucuna pruriens*) in molasses in large doses (2 oz. of the syrup daily for a child), without avail.

In cases of mild infection the embryos are not found every day, and this must be borne in mind.

I found rhabdonema in St. Kitts also this year.

Balantidium has lately been brought to notice in the United States. It undoubtedly produces a persisting diarrhœa.

I examined lately, with Dr. E. Branch at the St. Kitts Hospital, a case just admitted with chronic diarrhœa. We found balantidium only. Thymol 120 grs. given one day secured the absence of the parasites and the rapid recovery of the patient.

Two cases of my own in St. Vincent had uncinaria also.

In a third, balantidium was still present along with rhabdonema, after the administration of thymol for uncinaria.

Uncinaria and Thymol.—My own routine, following Sonsino, is to give 2·0 gme. at 4, 6, 8, and 10 a.m. on an empty stomach; breakfast of milk or pap at 12, and a dose of mag. sulph. earlier or later in the afternoon, according to the state of the patient and the action of the bowels. Some bear this without discomfort, and others suffer from giddiness, drowsiness, or vomiting. In old, feeble persons coma and death within forty-eight hours has resulted when the bowels remained obstinately constipated. The same dose has been given to children of tender years, but as they usually vomit some of the drug, one gives 90 grs. for economy.

The patient is usually sent home next day, unless he be dropsical or very anæmic and feeble. Many are not seen again, and it is inferred that these have been relieved. But among those who have furnished specimens for re-examination I have notes of the following cases:—

1	after	6·0	gme.	thymol	...	Uncin.	1	...	None 0
121	,,	8·0	,,	,,	...	,,	41	...	,, 80
16	,,	10·0	,,	,,	...	,,	2	...	,, 14
1	,,	13·0	,,	,,	...	,,	0	...	,, 1

It is evident from these figures that the single administration of thymol in the usual dose of 8·0 gme. in a large number of cases does not complete the expulsion of uncinaria.

Cases that had been completely rid of parasites in 1902, and become red and robust, have returned in 1904 with dermatitis and commencing symptoms of anæmia again. The dermatitis, "ground itch" it is called in St. Vincent, is very common in children, especially such as play on the bay in Kingston, where the sand is polluted with night soil.

Ascaris.—The experiences of a West Indian practitioner with the common round worm may not be uninteresting to our brethren in Europe. I have known over 100 worms passed in twenty-four hours from a child less than two years old. In the West Indies worms very commonly pass by nose and mouth; one has pulled them out on making a rectal examination, or felt them in the gut during a hernia operation. One child was said to have passed two large worms through the navel, and after admission to hospital another worm 8 inches long appeared under the dressing. No fæces came by the fistula, but pus.

Another child of eight months passed a worm through the top of a raw red swelling of the umbilicus which had been present since birth. This proved to be a prolapsed intestinal fistula, and was operated on and closed.

Worms may conveniently be felt for through the "bung-navel" which nearly all negro children have. Sometimes one can explore the abdominal cavity very satisfactorily in this way.

THE PATHOLOGY OF THE YAWS NODULE.

By J. Numa Rat, M.R.C.S., L.R.C.P.
Leeward Islands, W.I.

It is satisfactory to find, from his recent contribution on the above subject to the Journal of Tropical Medicine, that Dr. George Pernet's researches support the theory that the typical encysted excrescence which characterises yaws is due to a microbial invasion of the skin from without.

I drew attention to the probability of such an origin of the yaws nodule in a paper of mine published some

time ago in the above Journal, and pointed out the advisability of thorough disinfection of the skin in all cases of the disease and of the removal of the patient from all sources of such local contagion.

Many years ago I was led to believe that the granulomata of yaws were like what is known as "proud flesh," the result of an effort to expel some foreign object, which in the case of this disease was the germ thereof. It seemed to me at the same time that this process of expulsion was from within outwards, the offending microbe having already entered the cutaneous tissues, probably through the lymphatic system. Further consideration of the subject led me to the conclusion which I expressed in my paper, to which I have above referred, that while its papules and squamæ were possibly the only cutaneous manifestations of the affection in its action on the system generally, the encrusted granulomata were produced by the external invasion of bacteria.

This question is one which is of much importance in reference to treatment. Such mode of production of the yaws granulomata would demand their early destruction by local applications, persistent disinfection of the skin over a considerable period, and the removal of the patient from the dwelling in which he contracted the disease to a non-infected one.

The careful and frequent disinfection of the skin of a yaws patient has not hitherto entered, as it should have done, into the therapeutics of this affection. The idea is unconsciously acted on by those who go down to the sea and scrub patients in its waters, and by those who cauterise the growths referred to, but the systematic and general disinfection of the whole integument for the purpose of destroying morbific germs is not part of the practice of even yaws hospitals, neither does the disinfection of the wards themselves enter into the method of dealing with the disease in such institutions.

It is evident that, assuming such an origin of the yaws nodule, regular and thorough disinfection of the skin and the transference of the patient to a non-infected place are the rational measures to be adopted in our treatment of it both for curative and prophylactic purposes.

SIMILARITY IN NATURE OF SOME OF THE MORPHOLOGICAL CHARACTERS AND HABITS OF INSECTS.

By Major G. H. Fink, I.M.S., M.R.C.S. (Eng.), L.S.A. (Lond.).

In India, and I have no doubt in the Tropics generally, we find certain morphological characters and habits running with striking similarity among insects. This is to be chiefly noticed between the various bees, hornets, wasps, and the dragon-flies to mosquitoes; and also of the Simulidia, or sand-flies, to the latter (mosquitoes).

The figures from 1 to 5 are given as examples from drawings I have made of mosquitoes in the Tropics, showing the size in Nature and an enlargement given to bring out the markings more clearly. They explain what I mean.





Fig. 1.





Fig. 2.

Fig. 1.—The Bee Form of Mosquito.

Head: black, speckled behind.
Body: distinctly bee-shaped, dark brown, striped in darker bands on ventral aspect, with a fawn colour between the stripes. Dorsal aspect of body and legs speckled.
Proboscis: stout and thick.
Wings: marked as above.
Neck: set on body firmly with head protruding, of a cobra shape and powerfully built.
Buzzes loud, attacks in swarms like bees, and sticks tenaciously when it bites.
Called the bee form because of its bee-like characters and habits.

Fig. 2.—The Wasp Form of Mosquito.

Attacks like wasps in swarms, flies past and gives a bite. Most persistent in attacks if you enter into their neighbourhood in tropical countries.
Body: hornet or wasp-like, reddish yellow, rust-like, and sometimes a bright yellow, with dark bands across on dorsal aspect.
Head: set on a longish neck, while there is a distinct waist between thorax and abdomen. Most voracious in its habits.
Called wasp-like because of their resemblance to wasps in colouring and habits.

Fig. 3.—Snipe-like Type of Mosquito.

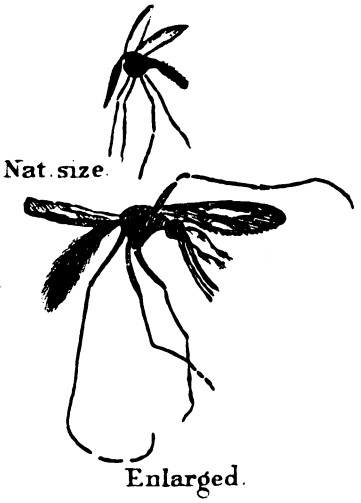


Fig. 3.

So called because of its length of proboscis, resembling the snipe's bill. It is coal-black in colour throughout, with a proboscis of very unusual length which looks more like a supernumerary leg when it attaches itself to a mosquito net or the white lime-washed walls in India.

The wings are feathery with striæ.

The tip of proboscis is tipped with a yellow colouration. Its bite is severe, and a very peculiar thing about it is that after its biting of a malarial person it passes two or three droplets of a sanguineous discharge *per anum* which turn yellowish, and last of all, like water.





FIG. 4.



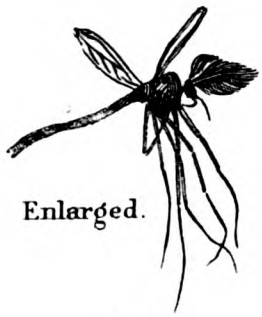


FIG. 5.

FIG. 4.—THE SHEPHERD'S NEEDLE TYPE OF MOSQUITO.

So called because of its resemblance to an insect known as Shepherd's Needle in India, which hovers over tanks and water-courses, and is harmless in its bites.

Not of much consequence from the point of view of disease.

FIG. 5.—DRAGON-FLY TYPE OF MOSQUITO.

So called because of its resemblance to the dragon-fly. Is harmless and exceedingly weak.

Now with regard to sand-flies (*Simulidia*), they are found in sandy districts chiefly, but may also be seen in clayey districts at the foot of the lower ranges of hills in India where malaria abounds, and here they are almost worse than in sandy regions.[1] Fig. 6 gives the body, thorax, and part of the head of a female sand-fly.[1] Fig. 7 gives the body of another full of

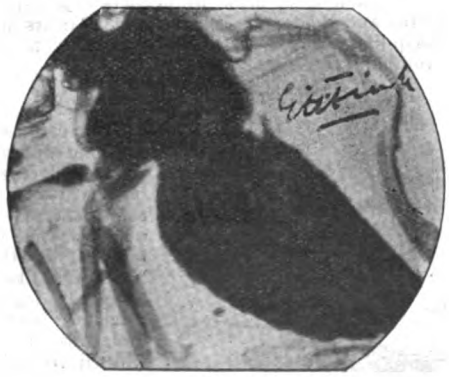


FIG. 6.

Photomicrograph of SANDFLY *(Simulidium)*, showing the form of the body.

parasites of a *flagellated* character and resembling the *cercomonas*. Two are clearly seen where marked ←— in fig. 7. If you take a large group of sand-flies on a slide and examine them, you will find a variety of shapes and forms which resemble mosquitoes morphologically, and among a group of about 200 or more, perhaps only two or three will present the characteristics which are peculiar to figs. 1 and 2 among the mosquitoes, and have the parasites present as in fig. 7. My object in pointing this out is, that in certain regions in India these sand-flies inflict bites on parts of the body of human beings which are exposed when



FIG. 7.

Photomicrograph of SANDFLY *(Simulidium)* taken in London of specimens brought from India (Assam), showing the interior of body crowded with cercomonas in their parasitic form. Two are distinctly figured where the arrow ←— points. I have seen tropical ulcers created by these insects.

wearing a pyjama suit, namely, face, ankles, wrists. The bites are very irritable, produce a papule, then a small vesicular head which, when rubbed off, shows an excoriated surface which increases day by day in circumference and depth, assuming at last the size of a 6d., 1s. or 2s.-piece at times; no discharge, except a very slight sanguineous one with a blush around it, which looks angry and red like a carbuncle at times. The novice is likely to mistake these ulcers which are tropical as *specific*, especially when they are single and not multiple. Moreover, they are copper colour on healing; but their locality, cause, and the fact that they do not present the thickening around the edges, as if a strip of parchment were let in to the edge, decides their character.

TREATMENT.

(1) *Preventive.*—Mosquito nets of the usual netting are absolutely useless to keep out sand-flies. You must have *mul-mul* nets, and if you wish for a comfortable rest at night, use a soap composed of castor oil, glycerine, peppermint oil, and liquor potassæ, and smear or lather it over exposed parts before sleeping.

(2) *Curative.*—If bitten, rub the tip of a Tændstikker match moistened with water over and around the part bitten, when all pains and irritation disappear and there is no ulcer. If an ulcer forms, equal parts of strong carbolic acid and camphor mixed and put over the ulcer daily with a camel-hair pencil will disperse the sore rapidly.

As general treatment, a tonic of quinine and iron in soluble form, three times a day after meals, in water or lime-juice.

Remarks.—These tropical ulcers are said to be protective against malarial attacks by some of the Baids and Hakims. They are most obstinate to treatment

[1] Figs. 6 and 7 were passed round at Leicester in the Tropical Section of Medicine, on July 27th, 1905.

by other means than those given above. Strong carbolic acid and camphor in equal parts mixed does not cause that burning which some might suppose would occur, and there is no need to fear it, especially if the surface of the ulcer be first gently wiped with absorbent antiseptic cotton-wool, and then painted with the mixture of these two drugs. I have treated horses with bursatee of the legs in the same way with success, and I would recommend its trial for rodent and other ulcers.

PRECAUTIONS AGAINST THE SPREAD OF PLAGUE IN CALCUTTA.

(1) Do not sleep on the bare ground at night, but on a charpoy, box, or shelf.

(2) Do not touch a dead rat with the hands, or eat grain in which dead rats have been found.

(3) Throw outside the dwelling all waste which rats will eat or upon which flies will settle.

(4) Avoid the breath and do not touch the face of a person dying or dead from plague.

(5) Clean away all discharges from the nose, throat, or bowels of a plague patient which soil his clothes or bedding, or those of other people.

(6) Do not shut up sleeping rooms at night, but allow plenty of fresh air to come in.

(7) Wash all clothings and dry them in the sun with beddings, &c., regularly.

(8) Flush all drains and privies at least twice daily.

FREDERICK PEARSE, M.D.,
Special Health Officer.

February 15th, 1905.

CAPTURE AND DESTRUCTION OF RATS IN CALCUTTA.

RATS being now recognised as the chief means by which plague is spread, the Chairman offers the following rewards and inducements to effect their destruction :—

For live rats—one anna.

For dead rats—one pice.

They may be brought to Municipal Office, Cornwallis Street; Incinerator Station, Moulali Durga, Entally; Municipal Office, Alipore, daily, Sundays excepted, from 8 a.m. until 5. p.m.

Occupiers of premises infested with rats may have them treated with rat-poison free of charge, on application to the undersigned.

FREDERICK PEARSE, M.D., D.P.H.,
Offg. Special Health Officer.

Central Municipal Office,
July 26th, 1905.

The notice here reproduced has been circulated extensively in Calcutta ever since the dates of their issue. Dr. Pearse, in a letter to the Editors, states that the rat is held in some sort of veneration in Calcutta, and that although thousands upon thousands of low class people in the city earn only about 8 rupees (10s. 8d.) per month, yet the number of rats brought into the stations has been very disappointing.

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THE

Journal of Tropical Medicine

SEPTEMBER 1, 1905.

ROST'S LEPROLIN.

IT would appear from the experiments carried out by Lieutenant-Colonel Semple, Director of the Pasteur Institute, Kasauli, India, in order to test Captain Rost's claim to have succeeded in cultivating the leprosy bacillus, and to have prepared a curative agency—Leprolin—have ended in proving a negative. The cultivation of the bacillus of leprosy having failed, there could, of course, be no preparation of Leprolin from such cultivation. The experiments were conducted by Colonel Semple with every possible precaution, and in a manner which leaves no doubt as to the accuracy of his conclusions.

Captain Rost co-operated in the experiments, and approved of the manner and methods of the tests applied. He selected the leprosy cases from which the cultivations were made, and everything he wished done during the enquiry

was carried out, even to the producing an atmosphere as similar as possible to that of Rangoon, where he had worked at leprosy. Colonel Semple concludes that defective technique in the preparation of the media, and the non-prevention of contamination of the cultivation, have been the cause of Rost's mistakes. When a sterile medium was used and subsequent contaminations avoided the results were negative. The good results obtained by the injection of Leprolin, as witnessed by Rost and others in Rangoon when injected into lepers, is ascribed by Colonel Semple to the filtered toxins from the contaminated media used in its preparation.

It would really seem, therefore, that Rost's methods have led him astray. At this pitfall of "method" many have stumbled and fallen, and many more will do so; the most expert bacteriologist as well as the partially equipped amateur. Captain Rost is now one of the group of men, many of them of eminence, who have "touched the leper" and repented. He succeeded in cultivating the leper bacillus to his own satisfaction, as several others have done, but it would seem that his observations were awry. Can it be that all the men who believed they had succeeded in cultivating the leper bacillus were wrong in their conclusions? It may be, but there have been so many positive statements that it is difficult to set them aside as of no account. Is it possible that the bacillus can be cultivated only during certain conditions of the bacillus itself, independently of the quality of the medium employed?

Allowing the cultivation of the bacillus of leprosy in a pure medium to be impossible, and, therefore, the preparation of a toxin on these lines unproducible, the fact that the Leprolin used by Rost proved beneficial in cases of leprosy should not be lost sight of. Even allowing that the efficacy of the Leprolin is due to filtered toxins from the contaminated media used in its preparation, the very potentiality of the product may be due to the contamination complained of. It is to be hoped Captain Rost will continue his investigations with the curative agency which he found, and not be damped in his ardour because under certain conditions the leprous bacillus will not grow in certain media. It is unpleasant, no doubt, to publish a piece of work and find it to be wrong, but that the publication is useless is by no means true. Mistakes may benefit the man who makes them, and profit many other men who take up the same line of enquiry. By the mistakes of ourselves and others we learn correct methods and arrive at accurate conclusions, be they positive or negative, and, from a scientific if not from a remedial point of view, the one is almost as important as the other. We hope to hear of further work by Captain Rost in the direction he has so earnestly laboured for the past two years.

Reviews.

THE EFFECTS OF TROPICAL LIGHT ON WHITE MEN. By Major Chas. E. Woodruff, A.M., M.D., Surgeon, U.S. Army. By Lt.-Col. G. M. Giles, I.M.S. (Retd.).

The compliment to a fellow-writer on tropical climatology implied in Major Woodruff's sending me his book, with the view to an expression of opinion on its contents, makes me regret the more that its perusal leaves me unable to agree with its author on many essential points. The following remarks can therefore hardly be based on the ordinary reviewer's point of view, but are, more strictly speaking, somewhat of a controversial character.

As a matter of fact, the work is one that hardly lends itself to review, in the ordinary sense of the word, as it is not a treatise on matters on which there is more or less consensus of professional opinion, but rather of the character of a thesis advancing what is practically an entirely novel view of the causes that render impracticable the colonisation of tropical regions by white men. It will not, it is thought, be denied that the current view of the matter, alike by the profession and the laity, is that high atmospheric temperature is the main hostile agent; the layman regarding this as the sole effective cause, while the medical man recognises that it is so, mainly because warmth favours the development of the low organisms that are the agents of various serious diseases peculiar to hot countries. While admitting that true sunstroke may possibly be due to the action of light on the nervous system, few would regard even this as proven, and apart from this, most of us regard strong light as positively beneficial, more especially on account of its bactericidal action, while gloom is universally admitted to be depressing and harmful.

Major Woodruff, however, attempts to show that light, and not heat, is the main, if not the sole cause of the disabilities of the white tropical resident, and that only those whom Nature has provided with a deeply pigmented skin are fitted to live in sunny

THE

Journal of Tropical Medicine

SELECTIONS

FROM

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Colonial Medical Reports—No. 11—HONG KONG *(continued).*

DISEASES.

The following diseases caused the greatest number of admissions:—

Fevers—	
Malarial	221
Febricula	128
Typhoid	42
Dengue	43
Venereal disease...	141
Disease of respiratory system	230
,, digestive system	257
Dysentery	106
Beri-beri	70
Rheumatism	73
Injuries	473
Alcoholism	57

The following diseases caused the greatest number of deaths:—

Diseases of respiratory system... ...	27
Injuries	31
Typhoid fever	9
Beri-beri	8
Dysentery	6

Dengue Fever.—Only 43 cases were under treatment as against 123 in 1903 and 422 in 1902, so evidently the disease is dying out. Almost all the cases occurred in October and November. Various endeavours were made to ascertain the cause but without success.

Malarial Fever.—Two hundred and twenty-one cases against 346 in 1902 and 787 in 1901, so it would appear as if this disease were also on the wane. Two deaths occurred as the result of the disease, both being of the "coma" form. The varieties of malaria met with were:—

Malignant	77·7 per cent.
Simple tertian	14·1 ,,
Quartan	1·7 ,,
Mixed infection	6·4 ,,

The diseases associated with malaria were:—

Dysentery	8 cases.
Beri-beri	2 ,,
Dengue fever	2 ,,
Peripheral neuritis	1 case
Bright's disease	1 ,,
Injuries	1 ,,

There were very few bad "crescent" cases, so that no very systematic trial of drugs against this form could be carried out. Neither iron nor carbolic acid in large doses seem to have any effect. Of those under treatment, 26·8 per cent. were Europeans, 46·7 Indians, 24·2 Chinese, and 2·1 Japanese.

Typhoid Fever.—Forty-two cases with 9 deaths against 28 with 6 deaths last year. The death-rate was 21·4 per cent. None of the cases had a relapse. Of the number treated, 21 were imported, Europeans accounted for 17, Japanese 12, Chinese 8, and Indians 5 cases. The increase amongst the Chinese is worthy of note. There is nothing to say about the treatment, which is purely one of nursing and treating symptoms. As far as our experience goes, no drug is of the least use. Carbolic acid and cyllin were both tried but without reducing the fever in the least, and in several cases upsetting the patients' feeding powers—a serious matter. Cyllin especially they would not take, as "it repeats so much," and this I found to be the case by practical experience. Possibly if coated in a different manner it might be of some use, as theoretically an intestinal antiseptic would be an ideal drug. The difficulty seems to be to find one of any use. B. naphthol and lactic acid were also used. Three cases with rare complications are inserted in the Appendix. Two cases had "green, spinach-like" stools shortly before death. This may be a sign of serious import, though it is not mentioned by the authorities. "Widal's reaction" was sought for in all cases, but it was just as often positive as negative and it is of no use clinically.

Plague.—Only 5 cases came under our notice, 3 of which died before they could be transferred to the Infectious Diseases Hospital.

Phthisis.—Fifty-five cases were under treatment as against 60 last year. Of these, 14 were fatal. There were 14 cases amongst Europeans, 21 amongst Indians, 14 amongst Chinese and 6 amongst Japanese. There is little to say of this serious disease and nothing in regard to treatment. Cyllin was tried internally without the slightest benefit. We have had two or three cases of apparent cures. One, an Indian gaol guard, whilst in hospital lost his fever and cough and the tubercle bacilli disappeared entirely from his sputum, but he returned in two months' time as bad as ever and was invalided. Another, an Indian policeman, came in for severe hæmoptysis with fever and tubercle bacilli in his sputum. He lost all his symptoms completely, but had to be invalided in three months' time for the disease. The third, a European, was admitted as a case of "liver abscess." He had fever, cough, hæmoptysis and a swelling over the left lobe of the liver resembling an abscess. His sputum was full of tubercle bacilli. All his symptoms completely disappeared, and when he was readmitted five months' later for venereal disease he was in perfect health and still continues so. No special treatment was adopted in any of these cases, or it might have been credited with the cure.

Febricula.—One hundred and twenty-eight cases against 96. Every endeavour is made to keep down this list, a refuge when all other causes of fever have been excluded. No doubt a few may be malarial, where owing to the administration of quinine before arrival in hospital the parasities have disappeared from the blood. There are two causes of mild feverish attacks which I have noticed and which I do not think sufficient stress is laid upon, viz., syphilis and constipation. I have now collected a fair number of irregular fevers, occurring in young adults, without any definite symptoms, in which as soon as an anti-syphilitic course of treatment is adopted the fever at once subsides. We have also had several cases in which as a result of chronic constipation a species of auto-intoxication has set in, and after free and thorough purging all symptoms have subsided. These cases present in addition to the temperature a furred

tongue, general malaise, and in some cases complain of general abdominal discomfort or pain in right iliac fossa; in fact, one or two have been sent in as cases of appendicitis. A weekly or bi-weekly action of the bowels being a habit with them, they are surprised when told they are constipated, and still more so when their bowels are opened two or three times daily.

Dysentery.—One hundred and six cases with 6 deaths against 50 cases last year—a serious increase which requires consideration. Of this number, 45 were Europeans, 44 Indians, 13 Chinese, and 4 Japanese.

Whatever be the actual cause in each particular case, there is no doubt that this disease must be classed in the "typhoid" group, *i.e.*, a disease almost solely spread by contaminated water or uncooked vegetables, especially when the latter are watered as they are in this part of the world. It is also significant that the number in which no microscopic cause could be ascertained, and which are placed in the bacillary group, have risen very considerably. Using a continuous water supply as an intermittent one is no doubt responsible for some of the spread of these water-borne diseases, as the vacuum in the pipes at times must be greater than any valve will stand, and so dirt and germs must get drawn into the pipes. The storage of water in all sorts of receptacles and places is probably even more responsible, and lastly, the system of manuring vegetables as employed in this country is not only disgusting but extremely dangerous to health, not only giving rise to serious illnesses, but to a good many minor ailments which are at least unpleasant.

Several of the cases have been very serious ones, necessitating the patients leaving the Tropics for good, or for a considerable time. Two cases were interesting, as from them the incubation period of the disease may be inferred, a somewhat difficult matter in tropical diseases. Both were on their way out from home and were on shore for the first time at Singapore. Forty-eight hours after, at sea, they were attacked with typical dysentery. One, I regret to say, died shortly after admission. The cases were presumably of the bacillary type. The Japanese referred to in last year's report (p. 16) as having amœbæ and ankylostoma eggs in his stool again came in with dysentery and was extremely ill, but nothing was found in his stools. I found that occasionally when magnesium sulphate failed to cure, the substitution of the soda salt proved of immediate benefit.

Divided into apparent causes the cases are as follows:—

(1)	23 cases with	*Amœbæ coli.*
(2)	2 ,,	,, *Cercomonas intestinale.*
(3)	2 ,,	,, *Distoma crassum* eggs.
(4)	8 ,,	,, malarial parasites in the blood.
(5)	71 ,,	,, nothing to be found in stool or blood.

Diphtheria.—Only one case, a Chinese child, was under treatment. The antidiphtheritic serum was used, but the child died from heart failure rather suddenly.

Pernicious Anæmia.—Two cases of this somewhat rare disease here were under treatment. One recovered sufficiently to leave for his home in India, but the other, a policeman, succumbed rapidly.

Hepatic Abscess.—Only one case was under treatment, with a successful result, and the case is published in the Appendix. With the large increase in the number of dysentery cases one would expect more if the theory had anything in it that one was the cause of the other.

Appendicitis.—Three cases were under treatment. Two recovered without surgical interference, and the other after the usual operation was discharged well.

Poisons.—Only one case was under treatment, and that due to lead. The patient, a Chinese storekeeper, recovered after a somewhat prolonged stay in hospital.

Fractures.—The following were treated during the year:—

Femur	5 cases.
Arm	3 ,,
Forearm	6 ,,
Leg	11 ,,
Skull (with 13 deaths)	14 ,,
Patella	1 case.
Scapula	1 ,,
Clavicle	1 ,,
Ribs	1 ,,
Fingers	1 ,,

Dislocations.—The following were under treatment:—

Thigh	1 case.
Shoulder	1 ,,
Elbow	1 ,,
Clavicle	1 ,,

Operations.—There were 283 operations performed during the year. Amongst the more important were:—

Liver Abscess.—Already mentioned.

Amputation through Shoulder-joint.—This was done for injury and was successful.

Ovarian Tumour.—This case occurred in a young Chinese. The patient never rallied from the shock of the operation and died shortly after.

Abdominal Section.—Six cases, all, I regret to say, fatal. They were done for ruptured intestine, intussusception in an adult Japanese, purulent peritonitis, the result of malignant disease of the rectum, and three exploratory. These latter were cases of retro-peritoneal hæmorrhage and a ruptured spleen.

Wound of Abdomen.—Three cases with protrusion of intestines. They all did well.

Extrauterine Fœtation.—This case recovered rapidly. The case being of interest is inserted in the Appendix.

Anæsthetics.—Chloroform was administered 185 times without any fatal result, all by the open method. Local anæsthesia was employed in 29 other cases, cocaine and eucaine alone or with adrenalin chloride and ethyl chloride being used.

Vaccinations.—The following were performed:—

	Successful.	Unsuccessful.	Total.
Primary cases ...	213 ...	0 ...	213
Revaccinations ...	311 ...	115 ...	426
			639

Radiography.—The new apparatus has worked well and been of great use throughout the year. Our best thanks are due to Dr. Jordan for kindly keeping our batteries charged.

Maternity Hospital.

Seventy-two cases were under treatment, the highest yet on record. Owing to lack of space one case was treated in the general ward of the Government Civil Hospital and another was sent to Victoria Hospital. Of this number 47 were paying patients, 13 wives of Government servants, and 12 free. Of the births, 24 were boys and 34 girls. The two fatal cases occurred in Chinese—one suffering from advanced interstitial nephritis, and the other from placenta prævia admitted in a moribund condition.

Fees.—The total fees received in this department were :—

Hospital fees	...	...	$33,498 34
Certificates	...	...	770 00
Total	...	...	$34,268 34

Table I.

Showing the Sick Rate and Mortality Rate in the Different Sections of the Police for the last Ten Years.

Year	Europeans		Indians		Chinese	
	Sick Rate	Mortality Rate	Sick Rate	Mortality Rate	Sick Rate	Mortality Rate
1895	85·91	0·89	112·89	0·44	40·00	2·07
1896	89·52	0·95	172·89	1·40	40·52	3·26
1897	94·28	0·95	146·11	1·37	35·54	0·99
1898	77·67	3·57	123·45	1·32	41·78	4·10
1899	104·46	3·57	151·98	1·08	47·09	2·75
1900	135·50	..	147·40	0·57	57·02	0·40
1901	160·31	3·17	147·17	0·56	52·97	0·49
1902	126·00	0·84	131·90	0·80	76·90	..
1903	115·04	..	124·56	0·57	54·69	0·82
1904	92·91	1·57	96·33	0·28	54·52	0·22

Table II.

Admissions into and Deaths in the Government Civil Hospital, from the Police Force, during each Month of the Year 1904.

Months	Europeans		Indians		Chinese		Total Admissions	Deaths
	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths		
Remaining on December 31st, 1903	2	..	7	..	3	..	12	..
January	6	..	17	..	22	..	45	..
February	8	..	22	..	14	..	43	..
March	10	..	16	..	12	..	38	..
April	14	1	24	..	14	..	52	1
May	9	..	43	..	21	..	73	..
June	5	..	26	..	35	..	66	..
July	6	..	37	..	32	1	75	1
August	11	..	33	..	25	..	69	..
September	9	..	34	1	14	..	57	1
October	19	..	25	..	25	..	69	..
November	12	1	35	..	12	..	59	1
December	7	..	23	..	18	..	48	..
Total	118	2	342	1	247	1	707	4

Table III.

The Monthly Admissions for Malarial Fever from each Police Station during the Year 1904.

Stations	Average Strength	January	February	March	April	May	June	July	August	September	October	November	December	Total	Percentage to Strength
Central	320	3	2	..	2	3	3	2	5	1	1	4	4	30	9·37
No. 1	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..
No. 2	37	..	..	..	..	..	..	1	1	1	1	2	..	6	16·21
No. 3	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..
No. 5	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..
No. 6 (Gap) ..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
No. 7	67	..	..	..	..	1	1	..	..	..	1	1	..	4	5·97
No. 8	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mount Gough ..	20	..	..	..	..	..	..	1	..	..	..	..	..	1	5·00
Tsat Tse Mui ..	7	..	..	..	..	..	1	2	3	2	1	..	1	10	142·85
Shaukiwan ..	13	..	..	..	..	..	..	..	..	..	1	..	..	1	7·68
Quarry Bay ..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stanley	11	..	..	..	..	..	1	4	4	..	3	..	2	14	127·27
Aberdeen	16	..	1	..	..	1	1	2	..	..	1	..	1	7	43·75
Pokfulam	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kennedy Town ..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cheung Chau ..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lamma Island ..	5	..	..	..	..	1	..	..	..	..	..	..	..	1	20·00
Water	150	..	..	..	..	..	..	1	..	..	..	..	..	1	0·66
Yaumati	33	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tsim Tsat Tsui ..	18	1	..	..	1	..	..	..	..	..	..	..	..	2	11·11
Sam Shui Po ..	14	..	..	..	..	..	..	..	..	1	..	1	..	2	14·28
Hunghom ..	17	..	..	..	..	..	..	..	..	..	..	1	..	1	5·88
Kowloon City ..	16	..	..	..	..	..	..	..	..	..	..	1	..	1	6·25
Tung Ching ..	7	..	..	..	..	2	..	..	2	..	..	..	..	4	57·14
Sai Kung	6	..	..	..	..	..	..	..	..	2	..	1	..	3	50·00
San Tin	10	..	..	..	..	..	..	1	..	..	..	..	..	1	10·00
Tai O	10	..	..	..	..	..	..	..	..	1	..	..	..	1	10·00
Sha Tin	6	..	..	..	..	..	..	2	..	..	..	..	..	2	33·30
Sha Tin Gap ..	3	..	..	..	..	..	..	..	1	..	..	..	..	1	33·33
Tai Po	11	..	..	..	..	..	..	..	..	1	..	1	1	3	27·20
Au Tau	14	..	..	..	1	1	2	1	..	..	1	1	..	7	50·00
Sheung Shui ..	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sha Ta kok ..	15	..	..	..	..	..	..	..	..	..	..	2	..	2	13·30
Ping Shan	15	..	..	..	..	..	..	..	..	..	..	2	..	2	13·30
Total ..	..	4	3	..	4	9	9	17	16	9	10	17	9	107	

Table IV.

Admissions into and Deaths in the Government Civil Hospital during each Month of the Year 1904.

Months	Europeans		Indians		Asiatics		Total Admissions	Total Deaths
	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths		
Remaining on January 31st, 1903	22	..	19	2	37	..	78	2
January	64	5	29	1	96	1	189	7
February	65	3	32	..	66	5	163	8
March	55	2	27	2	71	3	153	7
April	68	2	50	1	86	5	204	8
May	55	2	59	2	101	7	215	11
June	45	..	56	5	111	10	212	15
July	77	..	81	4	98	10	256	14
August	69	2	63	3	107	7	239	12
September	61	2	68	1	86	6	215	9
October	82	2	57	3	104	11	243	16
November	69	4	61	1	103	8	233	13
December	52	..	42	1	91	5	185	6
Total	784	24	654	26	1,157	78	2,585	128
Death-rate ..	3·06		4·03		6·74			

(To be continued in next Journal.)

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climates. The first five chapters of the book consist of a popular statement of biological and physical facts bearing on the subject. This is followed by a chapter on the "Known effects of light on white men," and the only conclusion to be drawn from it is that we have very little definite information on the subject, as most of the instances brought forward are open to an interpretation quite different from that deduced by the author. He states, *e.g.*, "that the early cave-dwellers of Europe carried on the human species for millenniums in perfect health." This, however, is a pure assumption, for we certainly know not whether they were healthy or otherwise. What we certainly do know is that modern races in the same stage of civilisation are so far from enjoying perfect health that their lives are much shorter than is the case with their well-housed and civilised contemporaries. It may further be pointed out that such races, as well as the darkly housed Irish peasant, use their habitations for little else than to sleep in, and hence their plan of construction can have little bearing on the question of the effects of light. Further, there are unimpeachable statistics to show that the expectation of life of the Irish peasant has greatly improved coincidently with the introduction of a higher standard of housing and of living generally, for "homes little better than caves in the hillside," are fortunately very rare in Ireland at the present day. Again, "The people in the Mediterranean zone live in dark cave-like houses." As a matter of fact, the Italians revel in the sun, and rooms with a southern aspect command a higher price on this account. Nothing struck me more than the way in which the poor of Rome throw open their windows during the day, even in the depth of winter, though at night their hereditary fear of malaria lead them to shun ventilation.

The darkness of the older type of Italian house was a question of fortification, and a necessary outcome of the want of security for life and property, up to quite recent times.

Where plenty of light was consistent with security they took all they could afford of it, so that while the lower floors of the old palazzi are strong and gloomy the upper ones are always amply provided with windows. I do not mean to imply that the Italian works in the heat of the day. No one but an Englishman or American would be guilty of such folly, but they are a light-loving people nevertheless, and the siesta occupies but a small proportion of the working daylight hours. Many pages of this chapter are devoted to the results of actino-therapy, but no prominence is given to the only fact that has much bearing on the question, viz., that this form of treatment has hitherto proved to be perfectly useless except in quite superficial lesions, and that if highly concentrated actinic rays are so easily stopped, it is extremely unlikely that ordinary sunlight can produce any appreciable effects much below the cutis.

This is followed by a chapter on "The blondness of Aryans," wherein the line of argument is much vitiated by the circumstance that the author appears to regard as accepted facts, ethnological speculations which bear the impress of the time when ethnology was regarded mainly from the philological standpoint. That man, for example, had a northern origin, and, what is more surprising, that the negro was evolved from the white man:—that the Aryans were blond. Now all this is pure speculation, and much of it highly improbable at that.

As a matter of fact, no one has any certainty of the home of the people who evolved the Aryan tongue, or what their complexion was. It was a practically useful language, and forms of it have been adopted by widely differing races. Its advanced stage of evolution, however, makes it certain that those who contrived it could have been only most remotely related to the ancestral ape-man, and that they are therefore the least likely of all races to furnish any hint as to the place of origin of the human species. As, however, with the exception of man, no anthropoid has been found except in a tropical climate, it is from the biological standpoint extremely unlikely that man's place of origin was elsewhere. This is followed by a chapter on the evolution of blondness, which opens with the proposition of what the author terms, the "law of cloudiness," "the blondness of a European nation is proportional to the cloudiness of the country." No statistical facts, either meteorological or enthnological, however, are cited in support of the statement, and so far as I know none are available on any sufficiently extended scale as to warrant generalisation. I have a strong suspicion, however, that this so-called law will not bear close examination. In the British Islands certainly the cloudiest part of the country is inhabited by the darkest people. That this dark race have been there a very long time we know, from prehistoric remains. Why, then, have they not evolved blondness or been improved off the face of the earth? In place of this, it is this dark west country type which has secured for England the domination of the sea, and there appears to be a growing impression among ethnologists that they are gradually supplanting the fairer components of the population throughout the islands. As, however, we have no old statistics of complexion, no definite argument can be founded on this impression, which in view of the slowness of such changes (assuming such to occur) cannot possibly claim to rank as a fact for some hundred years or so of exact numerical determination of the components of the population. Aryan migration is next considered, and here, again, the conclusions drawn are necessarily as speculative as the evidence on which they are based, and in many cases open to other interpretations.

The last chapter is the most important in the book and deals with the practical measures to be taken as the outcome of the conclusions led up to. It is so difficult in practice to separate the climatic effects of heat from those of light, and the measures to avoid the evil effects of the one are so usually equally effective in the case of the other, that here one necessarily often finds one's self in agreement with Major Woodruff's teaching, but when it is based on his theory of the absolutely mischievous action of light pure and simple, it is often not only erroneous but positively mischievous, and but for this I should have preferred to remain silent on the subject.

Major Woodruff, for example, regards the healthy tanned complexions of little American and English children as "pathological," and believes they would

flourish even better than they do, if they were afforded an equal amount of air and exercise in deep shade. Regardless of the evil effects of eye-strain, he considers light school-rooms objectionable, even in temperate climates, and it is easy to see that the holder of such extreme views is no safe guide to personal hygiene in the regions ruled by the sun. With the general proposition that deep pigmentation of the skin must help to protect the tissues below from the effects of actinic light no one will be disposed to dissent, but that it is the dominating factor in determining man's fitness to resist climatic influences is quite a different matter, and it is far more probable that this is determined by characters of a far less obvious sort, as yet undetermined.

Man's habit of clothing himself renders him practically independent of the colour of his skin. Moreover, throughout Nature, pigment appears to be determined by entirely other objects than resistance to light, protective resemblance to environment being by far the commonest aim of Nature. So much is this the case that it is a recognised rule among systematic biologists that colour characters should be, as far as possible, avoided in the definition of species. As all other anthropoids than man are arboreal in their habits, it seems probable that the evolving man had a similar *habitat*, and under such circumstances a dark skin would be a distinct advantage in the gloom of a tropical forest, and it is still in such localities that the blackest of mankind are met with; whereas the inhabitants of Persia, which is, perhaps, the sunniest country in the world, are so nearly white men that their pigmentation can be of little advantage to them. The Persian, it is true, affects dark clothing, but that can be hardly the cause of his survival, as shown by the fact that his next door neighbour, the Baluchi, in an equally sun-ridden climate, prefers white, when he can afford it, as also do the Pathans, who are often even fairer than the Persians. Many of the Pathans might be fairly described as blonds, some having blue eyes and quite light or rufous hair, and they live in a land where the sun glares all the year round, and where the summer heat rivals that of almost any part of the world. But in spite of this no more virile race exists. In all probability they exceed even the Irish in stature and are proportionally broad and strong, while no one who has had to do with them can doubt that they are potentially quite the intellectual equals of Europeans.

Fortunately for the other races of Asia their fierce independence of character has prevented the development of any social system compatible with expansion and empire, but within their own borders they have hitherto proved invincible, and their splendid physique, by the way, entirely disposes of another of Major Woodruff's generalisations, viz., that big men are found only in cold, gloomy climates.

That the European cannot colonise the Tropics is, for the present at least, true, and it may be that he never will be able to do so, but the possibility of such achievement is not to be disposed of off-hand by the statement of such facts as a third generation of white settler being unknown in India. The mere fact of continuous residence shows that they must have belonged to the "submerged tenth" of the Anglo-Indian population, and therefore unfit for struggle even among their own surroundings, because every-one who has succeeded sufficiently in the struggle for life sends home his children for education, and that for quite other than climatic reasons, for some of the hill schools are practically as efficient and healthy as the average English establishment. Take the case of my own children. Their parents would prefer to spend their retirement in India, and know that they would run but little risk, either in health or fitness for competitive examination. They would, however, be sneered at throughout life as "belonging to the county families of Missouri," "taking furlo' in a hackney cab," and so on; and what is worse, would acquire an abominable pronunciation of the English language which is practically an indelible brand of inferior social status. For reasons of this sort, the experiment of continuous European residence by families who have proved themselves really fit for the struggle with their fellows has never been fairly tried, and in these days of rapid communication is never likely to be so, but to assume it would fail if it could be fairly tried is a purely gratuitous assumption, and though I personally believe that it would fail I can only regard the facts, as at present available, as having little or no bearing on the question.

What one looked to find, but which is entirely wanting in this book, is definite experimental investigation. For example, what is the amount and character of the sun's rays that succeed in passing through the hands of persons of different complexion? In view of the very non-actinic colouration of the blood, it seems very doubtful if a larger proportion of the shorter waves will be found to pass through the tissues of an European as contrasted with a negro, but so far as I know the experiment has not been tried, though it certainly should be. The effects, too, of different kinds of light on brain tissue is surely determinable by vivisection, at least to some extent, and it appears that points of this sort should have been thoroughly worked out by any one who desires to prove that the world-wide belief in the healthfulness of light is erroneous. In conclusion, let me express to Major Woodruff my regret in being unable to find myself in agreement with his conclusions, but *magna est veritas et prævalebit* is, it cannot be doubted, as much his guiding principle, so that I feel sure he will in no way resent what, after all, is merely an expression of individual opinion.

OBSERVATIONS ON THE FILARIAL EMBRYOS FOUND IN THE GENERAL CIRCULATION OF THE EQUIDÆ AND BOVIDÆ. By A. Lingard. (Adlard, London.)

The parent filariæ are found in the common, anterior, and posterior aortas; other arteries are but seldom implicated. The pathological changes range from fatty degeneration of the intima and media to sclerosis, atheroma, and calcification. Their presence does not shorten the natural term of the life of the host, which is usually calculated at an average period of ten years. The embryos are deposited in the lungs, very frequently in the liver, and occasionally in the kidney, underneath the capsule. They form

calcareous bodies the size of a grain of mustard seed. On section of the affected organ yellow nodules are seen surrounded by a circle of fibrous tissue, the centre being calcarous or caseous, or of the consistency of putty. In the lesions of recent date filaria embryos, or larval forms of nematodes, are seen, while in those of more advanced age portions of their bodies are made out sometimes with difficulty.

Deposition of the embryos in the skin sets up a condition known as bursati, characterised by the presence of indolent ulcers in the skin and subcutaneous tissue, they degenerate and calcify, being then designated kunkur. The ulcers usually originate towards the termination of the hot season, and tend to attain their maximum size during the rains; they may be smooth and almost level with the surface of the skin, but more frequently have a worm-eaten appearance, with light yellow-coloured granules, the encysted embryos. The parts most frequently affected are the lower part of the extremities, and the angles of the mouth, sheath, &c.

The treatment consists in combating the pruritis and healing the sores. If embryos are absent from the blood, the usual life of the parent worms is about a year. The wound may be excised.

Gunn (*Veterinary Journal*, November, 1884) described a pruriginous dermatitis, with the formation of crusts containing worms. Baruchello described a cutaneous helminthiasis due to *Filaria papillosa*, which caused pruritis, cured by an ointment of saturated alcoholic solution of carbolic acid 120 grams, corrosive sublimate 12 to 25 grams, sulphur 400, vaseline 2,000 (*Giorn. di Veter. Militare*, ii., 1889).

Abstract.

THE PREVENTION OF MALARIA.

Abstract from a paper by ALBERT J. CHALMERS, M.D., F.R.C.S.
Ceylon.

(*Read before the Congress of the Royal Institute of Public Health, July 24th, 1905.*)

INTRODUCTORY.

MALARIA is a contagious disease which is spread from one human being to another by means of certain species of Anopheles. The contagion is in the form of definite protozoa living in the blood, and now known to exist particularly in the blood of native children. The parasite is also apt to remain in the blood of natives who, though usually living in a healthy district, have become infected by working in malarious areas. The species of Anopheles known to spread malaria are:—

Anopheles bifurcatus.	*Myzomia listoni.*
,, *maculipennis.*	,, *culicifacies.*
,, *jesoensis.*	,, *funesta.*
,, *martini.*	,, *superpicta.*
,, *pursati.*	*Myzorhynchus paludis.*
,, *vincenti.*	,, *constani.*
Nyssorhynchus lutzi.	,, *pseudopictus.*
	Pyretophorus costalis.

To the above list may be added a small mosquito, provisionally called *Anopheles kumassii*, which was found in Kumassi during the siege of 1900, and in which the germ was found.

In addition, *Nyssorhynchus fuliginosus* and *Nyssorhynchus maculipalpis* have been noted as doubtful carriers.

The work of Christophers, Stevens and James with regard to the non-carriage of malaria by *Myzomia rossii* is confirmed, and doubt is expressed as to *Myzorhynchus barbirostris* doing so.

The presence of the larvæ of *Myzomia culicifacies*, a well-known carrier of malaria, in the streams and rivers of certain parts of Ceylon, is emphasised as demonstrating the difficulty of dealing with such regions by anti-larval methods. Their presence in wells is also noted, though there is no difficulty in dealing with wells. The ease with which infected Anopheles are found in the Gold Coast Colony of West Africa is compared with the difficulty of discovering them in Ceylon.

THE PREVENTION.

The different suggestions for the prevention of malaria may be classified under two headings:—

(*a*) Those which aim at the prevention of the infection of the Anopheles by man.

(*b*) Those which aim at the prevention of the infection of man by the Anopheles.

(*a*) *Those which Aim at the Prevention of the Infection of the Anopheles.*—The most important point is education. The medical man of this country is educated by the Tropical Schools, but the Ceylon Government had set an admirable example in allowing post-graduate courses of instruction for those of their medical officers whose circumstances do not permit of leaving the colony for such instruction.

The education of the people has been attempted by lantern lectures, illustrated placards in the vernacular, &c., but the important step is the scheme for the teaching of hygiene to the children of elementary schools. The school teachers are drafted at Government expense to Colombo to undergo a course of instruction in elementary hygiene, and are then to teach their children by kindergarten methods, without the aid of any book, elementary hygiene, with special reference to their own particular village. This admirable method, which originated from Sir William Macgregor, of Lagos, is without doubt one of the wisest methods of attacking malaria and other diseases ever instituted by the British Government.

Quinine prophylaxis is strongly advocated for the native population, and the numerous Government dispensaries of Ceylon are cited as the method of bringing the drug to the native.

Malaria should be treated as a contagious disease, and hospitals should have special malarial gnat-proof wards. Especially should hospitals in malarious districts be rendered gnat-proof, and it is a matter of regret that this is so seldom done.

(*b*) *Those which Aim at the Prevention of the Infection of Man.*—The most prominent are those directed against the insect or its larvæ. Reference was made to the fact that natives of Ceylon use various methods to expel mosquitoes from their sleeping rooms, and of Sir Henry Blake's discovery that native medical works

4,000 years old contained references to fever caused by mosquitoes.

Anti-larval methods have proved most useful, for example, those carried out by Ross at Ismailia. In Ceylon the Valikaman district of Jaffna is most suitable for such methods, and a scheme for dealing with this district is at present before the Government. But many districts of Ceylon are not suitable for such methods, which are by no means of universal application, though individuals might do much by personally attending to their own compounds.

The mechanical method of prevention by mosquito nets and wire gauze is strongly advocated. In Ceylon a trial movable gnat-proof hut has been provided for persons compelled to work in very malarious places in the jungle, and it is proposed to render a house gnat-proof. By the experience of the people who live in these experimental houses improvements may be introduced so that future ones may be more comfortable.

Segregation was considered with reference to Accra on the Gold Coast Colony, and was considered to be unsatisfactory on the grounds that it favours one race while it leaves untouched the real prevention of malaria. The highly insanitary condition of Accra a few years ago was explained, and it was considered probable that this insanitary condition of West African towns might be the great cause of the difference in mortality of the malaria there and in such more sanitary places as certain parts of Ceylon. It was pointed out that the isolation of Victoriaborg at Accra separated the European from the insanitary James and Ussher towns, and that this alone might account for the less mortality there than when the European lived in the other towns. It was further pointed out that people living at Victoriaborg often suffered from fevers, and that it had been possible to find *Pyretophorus costalis* in those bungalows. It was also observed that there is always a natural segregation of the poorer from the richer classes which is free from the objections to a racial segregation.

It was considered to be more scientific to follow the methods of the Ceylon Government in :—

(1) Instructing the resident medical men in malaria and other matters.

(2) Educating the people, and particularly the children, in elementary hygiene.

(3) Improving sanitation.

(4) Improving medical treatment of natives and the facilities of obtaining quinine.

(5) Studying the country to find what methods could be best applied to the different regions.

Finally it was considered that no one method would be found so generally useful as a combination of methods, and that more should be done than was at present being attempted.

FORTY cases of beri-beri with three deaths occurred at the St. Louis Exposition amongst the Filipinos present at the Exposition.—*Gazetta degli Ospedali, Milan*, vol. xxv., No. 145.

Correspondence.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—In the number of the JOURNAL OF TROPICAL MEDICINE for July, 1905, Major G. H. Fink writes as follows :—

"I would draw attention to the following points in Part I. of my book first, before taking up the point regarding membranous opacities :—

"(1) The question of iridectomy is discussed in p. 18.

"(2) The question as to whether the capsule of the lens should be pricked or not is dealt with in pp. 21 and 22.

"(3) The last stage in the coaxing out of the lens is given in pp. 22-26.

"There are two points connected with my operation for cataract which, during my experience, I found most useful, namely, (*a*) the nature and position of the eye speculum ; (*b*) the irrigation of the anterior chamber of the eye with a 1 in 10,000 perchloride of mercury solution which I employed. These two points are given in p. 12 and p. 13 of my *brochure* on cataract above mentioned.

"I mention them because, since my work has been published, I observe that Elliot, of Madras, and another operator of the eye have mentioned these points as if they were original discoveries made by them respectively."

I have never seen or even heard of Major Fink's book, though I believed I had read most of what had been written on cataract in recent years. In any case the statement in Major Fink's last paragraph is certainly incorrect, and, I think, is also unjust and misleading.

To take up his points *seriatim* :—

(1) The question of iridectomy in cataract extraction has been discussed ever since Von Græfe's introduction of "Modified linear extraction," and it would be puerile for either Major Fink or myself to claim any precedence in a discussion which began whilst we were in our cradles or before.

(2) The credit of first using "primary capsular laceration" belongs (I believe) to Drake-Brockman. In the *Indian Medical Gazette* of May, 1897, I most unequivocally gave him the credit for it, which was and is his due.

(3) Major Fink's third reference I am unable to follow.

(4) As to the nature of the eye speculum : I use an old-fashioned type and have never claimed to have invented any speculum. I have pointed out how a speculum should be held so as to avoid pressure on the eye. I did so because I had never seen this point dealt with in any writing on the subject.

(5) Major Fink irrigates an anterior chamber with 1 in 10.000 perchloride. I have never used such a solution for the purpose of cataract extraction. I have always used normal saline solution, following McKeown's advice, and have repeatedly given McKeown the full credit for his method which I adopted.

I wish to state that, so far from desiring to pirate Major Fink's method, I consider the irrigation of an anterior chamber with a 1 in 10,000 solution of perchloride to be opposed to the most elementary principles of physiology. I am surprised to learn that any surgeon can confess to such a proceeding.

The remainder of Major Fink's remarks do not concern me, but I am unable to subscribe to his contention that Major Maynard's criticisms are invalid, because Major Fink had extracted 1,000 cataracts to Major Maynard's 100. It is well known that very often the criticisms of one who has done a few cases and made the most of his material are of very great value. As my own cataract extractions run into thousands I perhaps may be allowed to make this criticism, fully valuing at the same time, as I do, the advantage of operative experience.

Yours faithfully,

R. H. ELLIOT, M.D., B.S.Lond., D.Sc., &c.

Madras.
August 3rd, 1905.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—I enclose herewith a copy of a representation which I have submitted to the President of the British Medical Association, in connection with the appointment of a Dr. Wunsch, an unregistered medical practitioner of German nationality, as Medical Officer to the British Legation, Tokyo.

It seems to me that the matter is one of sufficient importance to the British medical profession, both at home and abroad, to justify the publication of the facts in the columns of your influential Journal, with a view to enlisting the co-operation of the profession against the grevious injustice which has been perpetrated, and also in order to guard against the repetition of such occurrences in future.

Yours faithfully,

SIDNEY GOMES, F.R.C.S.Edin.

41, *Tsukiji Tokyo*,
July 28th, 1905.

41, *Tsukiji Tokyo, Japan*,
July 27th, 1905.

SIR,—I have the honour to submit the following facts, which I venture to think you will consider of sufficient importance to the profession to justify the Council of the Association in bringing them under the notice of Lord Lansdowne.

(1) In the early part of January of the present year, the position of Medical Officer to the British Legation in Tokyo became vacant. This appointment, which carries a salary of £360 per annum and permits of private practice, was, I understand, sanctioned by the Foreign Office.

(2) Among the applicants were British subjects, registered in Great Britain; but despite this fact the selection fell upon a Dr. Wunsch, who is of German nationality, who qualified in Germany, and who cannot, therefore, be legally registered in Great Britain.

(3) The appointment of Dr. Wunsch to the British Legation is contrary to the provisions of the Medical Act of 1858, Sections XXXI. to XXXVII.

(4) The British Legation is, by international law, British territory, therefore the appointment of Dr. Wunsch as Medical Officer in effect authorises him (though not legally qualified to do so) to practise medicine, surgery and midwifery within the dominions of His Britannic Majesty.

(5) Let me anticipate a very probable reply to those objections. It may be urged that none of the other applicants were considered entirely satisfactory. This would be an excellent reason for not appointing one of them, but will hardly be held to justify the practical exclusion of all the other medical men throughout the British dominions.

(6) It is one of the conditions under which such appointments are held that sufficient notice of intended resignation shall be given by the holder to enable the authorities to find a successor, and as every medical practitioner knows, where an eligible candidate cannot be obtained privately the vacancy is freely advertised in the official *Gazette* or in our official *Journal*. Having been myself in England at the time, I can assert positively that nothing of this kind was done.

(7) Personally I do not desire the appointment. I am a British subject; a member of your Association; a Fellow of the Royal College of Surgeons, Edinburgh; Licentiate of the Royal College of Physicians, Edinburgh; Professor of Surgery in the Charity Hospital Medical College, Shiba, Tokyo; Medical Adviser, Sun Life Assurance Co. of Canada; and am also in practice as a surgeon in Tokyo. My sole desire is to treat this subject without prejudice, and to point out, and if possible get remedied, an injustice that has been done to the British medical profession to which I have the honour to belong and in which I feel an abiding interest.

(8) To appoint a German subject medical officer to a British legation would be (even in the case of one duly registered) to cast an unmerited slur on the entire British medical profession, for it would imply that there was no British subject competent to fill the position.

(9) Suppose it possible that a British medical man had been appointed to the German Legation out here, what would the German press have said?

(10) In conclusion, I beg to point out that the oft-repeated warning uttered by our professors in their inaugural addresses to the British medical schools as to the overcrowded condition of the profession, while very salutary, does not put the matter in a proper light and suggests a wrong remedy. The right one will be obvious from the facts I have stated.

I have the honour to be, Sir,
Your obedient Servant,
(*Signed*) SIDNEY GOMES.

The President,
British Medical Association,
London.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Indian Medical Gazette," May, 1905.

1. The Operation for the Removal of Elephantiasis of the Scrotum and Penis; Notes on 200 Consecutive Cases. By J. T. Calvert, M.B.(Lond.), Major I.M.S.

2. Notes on the Prevalence of Malignant Disease in Bengal. By J. W. D. Megaw, M.B., Capt. I.M.S.

3. Some Remarks on Malaria Prophylaxis. By S. H. Lee Abbott, M.B.(Lond.), I.M.S.

(1) Calvert had only two deaths in 200 cases operated upon. He uses Macleod's method of applying the large rubber cord round the root of the tumour to arrest hæmorrhage; pockets are made for the testicles from the inside of the thighs, the skin-flaps are brought together by silver sutures, skin grafts from the front and inner surface of the left thigh are applied longitudinally along the side of the extended penis, the grafts are kept in position by wrapping two strips of oiled silk about an inch wide and twelve inches long round the extended penis, followed by two long strips of boric lint wrung out of boracic acid lotion and wrapped in wet. This dressing is kept in position by a few strips of twisted gauze tied circularly at intervals. The perineal and pubic wounds are dressed with strips of perchloride gauze, sublimate wool and a figure of eight bandage. The graft wounds in the thigh are covered with a piece of lint soaked in picric acid solution 1 per cent. The perineal wound is dressed on the fourth and again on the eighth day. The penis is dressed on the fourth day, the oiled silk removed and strips of gutta-percha tissue substituted. The smaller tumours were removed without the application of the elastic cord, the incisions being begun below.

(2) Megaw finds that carcinoma is more common among Hindus than among Mahomedans in the Medical College Hospital, Calcutta, there being about

seven times as many cases among the former as among the latter. Although the total admissions of Hindus to Mahomedans were as about three (a little less) to one, the cases of cancer amongst Hindus numbered 64 to Mahomedans 2; scirrhus of breast, Hindus 57 cases, Mahomedans 4; cancer of mouth and pharynx, 49 Hindus to 1 Mahomedan. In reference to the prevalence of preputial cancer, it is to be noted that the Mahomedans alone are circumcised; carcinoma of the skin is quite common in both classes. The incidence of sarcoma in the two classes is almost equal. Taking malignant disease as a whole, the Indian experience seems to show that there is a certain amount of "inevitable" cancer which appears inseparably associated with the general conditions of human existence, but that there is also a certain amount of "avoidable cancer" associated with local and avoidable habits and conditions, the betel (pan) chewing in India seemingly accounting for the extraordinary prevalence of oral and pharyngeal cancer compared with the amount met with in Britain.

(3) Abbott draws attention to the distance mosquitoes can be carried by wind. He believes that he was able to prove that mosquitoes were carried a distance of three miles in a good breeze of wind. Abbott is of opinion that mosquito curtains and guards, not quinine, will give the best results in the matter of prophylaxis.

"Journal American Medical Association," May 27, 1905.

Headache from Malaria.

C. J. Stedman reports a case of headache recurring every forenoon and lasting five or six hours, without temperature. The attacks occurred during mid-winter, whilst the weather was of Arctic severity; no previous history of malaria; malarial spores found in the blood; headache cured by quinine.

"Lepra," May, 1905.

Leprosy in Basutoland.

E. C. Long states that in Basutoland lepers exist in the proportion of 1 to every 1,479 inhabitants (total inhabitants 218,902). He recommends isolation of lepers as the chief means of eradication of the disease.

"Berliner Klinische Wochenschrift," xlii., No. 14, April 3.

Treatment of Tropical and Ankylostomal Anæmia.

O. Liermberger advocates the use of the waters of the arsenic-iron springs of Levico in Southern Tyrol.

SOME EXTRACTS FROM THE CLASSICS.

Quinine. The Jesuit's Powder. ("Burnet's History of His Own Times," vol. ii. Date 1679.)—The King (*i.e.*, Charles II.) was taken ill at Windsor of an intermitting fever; the fits were so long and so severe that the physicians apprehended he was in danger. . . . The fits did not return after the king took quinquina, called in England the "Jesuit's Powder."

Cost of Inoculation for Small-pox.—The devastation of the small-pox when it visits places where it comes seldom is well known. He (the Laird) has disarmed it of its terror at Muach by inoculating eighty of its people. The expense was two shillings and sixpence a head. (Johnstone's "A Journey to the Western Islands," &c., 1773.)

Venereal Disease. (Harris's "Voyages," ed. 1754; "Magellan's Voyage," 1522, p. 13.)—Arrived at Tima. The inhabitants are idolaters and have among them, which is also common to all the Isles of the Archipelago (*i.e.*, the East Indies), the distemper we call the "Venereal Disease."

In Captain Cook's "Voyages" two references are made to venereal disease. In the account of his first voyage it was called the "rottenness" by the people of Otaheite, and was said to have been brought there by the vessels that had visited the island fifteen months before Captain Cook's arrival. In his second voyage we read: "They call the venereal disease *Apa na pretense* (English disease), though they, to a man, say it was brought to the isle by M. de Bonjainville."

Gonorrhœa and soft chancre were doubtless with syphilis included under the heading of "venereal disease," but it is probable that these several accounts refer especially to the latter; the "rottenness" suggests phagedænic ulceration.

J. Burton Cleland.

Notes and News.

Malarial Gastro-intestinal Hæmorrhage.—D. Scozzate describes a case of malaria, in which the patient vomited blood and passed blood by the anus. The condition was cured by quinine.—*Deutsche Medizinische Wochenschrift*, vol. xxxi. No. 11.

Filariasis in Kamerun.—H. Ziemann states that *Filaria perstans* occurs in the blood of Europeans in Kamerun, and in proportion as they were infected so were they affected by local swellings of temporary character and by multiple abscesses.

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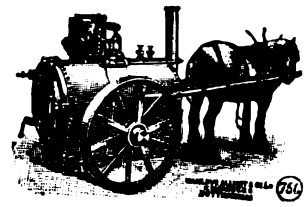
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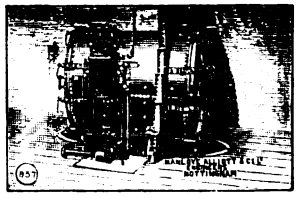
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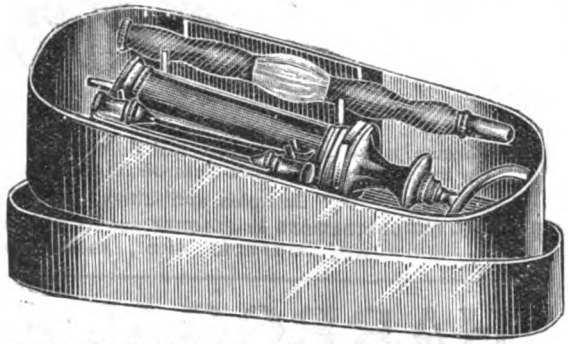
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Original Communications.

NOTES ON SOME METHODS EMPLOYED BY KELANTAN MALAYS IN THE TREATMENT OF PURU OR YAWS.

By John D. Gimlette, M.R.C.S., L.R.C.P.

Medical Officer to the Duff Development Co., Ltd., Kelantan, Malay Peninsula.

The communication which I had the honour of making to the Therapeutical Society was based on notes which I have made from time to time on Yaws as it occurs in this part of the Tropics. A period of over seven years' service in the Government of the Federated Malay States has afforded ample opportunity for observing yaws or "puru," the latter being the name given to it by natives of the Malay Peninsula. A further and better opportunity for observing this disease under purely native conditions has been afforded me during the last year by a residence in the interior of Kelantan. The State of Kelantan is north of Pahang, and approaches Siam, being in geographical position between 5·40° and 6·20° N. lat. The country, until quite recently, has been administered by a native Malay Rajah.

Puru is very common, both in the towns and villages of Kelantan. It belongs equally to the native palaces and to the poorer dwelling places. The disease is identical with that so clearly described by Charlouis as occurring in the islands of the Malay Archipelago.[1] The identity of puru with yaws has been pointed out by Barker, of Borneo.[2] It is not necessary, therefore, to review in this paper the mass of evidence which proves the identity, and which adds so many other native names to the nomenclature of frambœsia or yaws.

The disease is spread all over the Federated Malay States, viz., all over Perak, Selangor, Pahang and Negri Sembilan. It is chiefly confined to the Malay population, being especially common among children in the less civilised of the States, *e.g.*, in Pahang.

So far, its prevalence has not attracted much attention from the Government of the Federated Malay States. This is probably owing to the fact that it does not interfere much with labour (which is mainly carried on by Chinese) and, speaking generally, it does not permanently injure the health of the Malay community. Death from an ordinary attack of puru is almost unknown.

As in other tropical countries in which this disease is prevalent, an attack of puru or yaws is generally considered by the inhabitants to be a salutary experience for their children. Inoculation is not, however, practised by Malays, and although the high degree of contagion is well known to them, isolation is never thought of, but natives will avoid personal contact with the discharges of yaws, and do not care to eat rice with people who may be afflicted with the general eruption. The chronic sores of the foot (puru duriyan)—the so-called "durian sores," of Kelantan (known as "bubal" in the other states), are not considered to be infectious, but Malays are careful to bathe up stream or away from people who are engaged in washing either their sores, or those of their sick children, at the time.

There is a belief amongst some of them that the blister caused by accidental contact with the "getah," or fresh sap, of a common local jungle tree called pokoh machang, the horse mango (*Mangifera fœtida*), is a ready vehicle for infection by puru, should there happen to be cases of the disease in the neighbourhood. These trees are sometimes avoided in consequence, especially in August, when they are in fruit, except by those who think that they may have secured immunity owing to repeated attacks of puru in childhood.

In the early stages of the disease the only native form of treatment employed for the relief of the prodromal fever and muscular pains is the superstitious Malay practice of "menjampi," or charming by incantations. It is held by Malays that active treatment is of no avail until the full development of one or more puru sores has been attained. The sore which is so often watched, with the object of timing the commencement of treatment, is known to them as the "puru ibu," or mother sore. When this so-called parent sore has developed, their most valued remedy is the external application of a latex, or kind of gum, which is called "getah agu" in Kelantan, or "getah jintan" in Pahang Malay. This is obtained from a climbing jungle creeper known in Kelantan as "akar agu" (*Akar, lit.*, a root, the generic name for scandent or creeping plants). The agu plant grows wild. It is very like *Hunteria corymbosa*, but is uncommon. It is prized by Malays, and, like many other of their medicinal plants, is protected and cared for. A red variety is especially valued. The latex is obtained by cutting the live stem, mixed with water, to allow for its inspissation, and may be bought in this form in the native market at Kota Bharu. The remedy is smeared day by day on to the sores of the general eruption. So far as my limited clinical experience in Kelantan goes, "getah agu" causes the sores of puru to shrink, and is of value as a local application.

Another latex which is valued is obtained from a jungle creeper called "akar gam." In this case the remedy is obtained by incising the fresh fruit, but it can also be procured by incising the stem. It is generally known under the name of "buah gam" (*Buah, lit.*, a fruit) and is commonly applied to the sores of puru in the same way as "getah agu." In some cases in which the sores are chronic and do not respond to treatment "buah gam" is applied in a different way. The dry fruit is roasted, then powdered, and finally made into a paste with a little water. In some cases of chronic and recurring sores the ashes obtained by burning the stem of "rotan sega badak" (*Calamus ornatus*) are used. Rotan in Malay is a generic name for rattans of the genera calamus and dæmonorops.

Another local Malay remedy is well known under the name of "terosi." This is sulphate of copper. In the general treatment of puru "terosi" is reduced to powder and then mixed either with palm oil, or with a latex called "getah pulai." "Getah pulai" is obtained by cutting the stem of the young pulai tree. This is a large jungle tree (*Alstonia scholaris*),

External applications of this kind containing "terosi" cause a great deal of pain. They prevent sleep and are not often used on this account, rarely, if ever, being employed in the early stages of puru. With the object of preventing pain, these applications are sometimes prepared by first burning the "terosi" in a slow fire until it is blackened; then pulverising and mixing into a paste by means of the juice of the common lime fruit—limau nipis (*Citrus acida*).

A more important drug, for sale in the Kota Bharu market, is "tebah tikus" (*tikus*, a rat), which, like "terosi," is imported *via* Singapore. "Tebak tikus" is pure arsenious acid, or "white arsenic;" it assumes rather odd forms, which are probably due to its having been collected from the flues of some dyeing works. It is used externally in the treatment of puru either by itself in the form of a powder, or as an addition to various kinds of roughly-made "pastes" which are prepared from certain native plants. These vegetable "pastes" are freshly made as occasion demands; in one instance by grinding down with a little water the root of a wild, red vine, called in Malay mali puchok merah, a plant which is identical with Leea rubra (*Merah*, *lit.*, red), and in another case by treating in the same way the root of a low shrub called manis (*Sauropus albicans*). Manis is the Malay for sweet or light in reference to some colours.

"Tebah tikus" is used as a poison by criminals, but it is not administered internally as a medicine by Malays. It is the "berangan puteh" of Java, being probably brought from Siam or Burma. The sulphurets orpiment and realgar are also used in puru, but all the external applications containing arsenic, being caustic, are much disliked on account of the pain which they occasion.

Mali puchok merah is given by the mouth for puru as well as being used externally, and among other internal remedies are Melor hutan, a wild jessamine (*Jasminum bifarium—Oleaceæ*), and the black variety, of Kemantu. This latter is a tree of Indian origin (*Clausena excavata*). It is called pokoh kemantu hitam, or the black kemantu tree, pokoh meaning a tree in Malay, and hitam, black. There are other varieties of this tree which are not used in medicine. Akar jelar batu is also administered internally for puru. In each case the roots of these plants are ground down on a "batu asah" (a stone on which medicines are pounded or ground down) and then infused in cold water. There is no fixed dose. Occasionally a mixed infusion is used in puru of kemantu hitam and Tuko takal (*Baccaurea wallichii, Euphorbiaceæ*) a jungle tree which is fairly common.

Various applications are made for puru of the foot. The following method of treatment, known as "tanak puru" (*tanak*, *lit.*, to cook), is a favourite one with some Kelantan Malays. A small round hole about a foot in depth is made in the ground, and a slow fire is kindled at the bottom of it; half a cocoanut shell with a hole in it, or a suitable piece of bamboo, is then fitted over the red-hot embers. The affected foot is rested on the top of this improvised screen in such a way as to expose the sore to the heat of the smouldering fire. Kemantu leaves are often put on the fire as well as those of Kedondong, a tree belonging to the genus Canarium. The bark of the latter is sometimes burnt on the embers in addition to the leaves. Relief of pain is obtained after three or four lengthy exposures. Lime is also a popular remedy for puru of the foot. It is mixed with oil or with the juice of "keladi puyoh," a common Malay aroid of the genus Alocasia (*Typhonium roxburghii*). Stones may be heated and applied as hot as can be borne. The actual cautery in the shape of a red hot nail is occasionally used, and even excision is attempted by means of "parangs," or the rough iron choppers which are usually used by natives in felling trees.

It is of general interest to note that the drugs used in puru are not used by Malays in their treatment of syphilis. Syphilis is universally believed by them to be entirely distinct from puru. In Kelantan, syphilis is well known, being recognised under the local term of "seduwan sundal" (*sundal*, *lit.*, a barefaced harlot). The chief Malay drug used for syphilis is pokoh restong (*Tabernæmontana corymbosa*). Pokoh restong grows wild, but is often cultivated; it is praised by natives as being a valuable medicinal product. The root is used and mostly in the form of a lotion, especially in cases of ulceration and destruction of the nose. It, as well as "trong pipit puteh" (*Solanum indicum*), is also given internally for syphilis, but neither of these is employed in the treatment of puru or yaws. Trong is a malay word used to designate the plants of the Solanaceæ (*puteh*, *lit.*, white).

In conclusion, the apparent influence of vaccination as a preventive method of treatment must be mentioned. It has been noticed by the Malays in Pahang. Although Keelan[8] from experience in Dominica, has referred to the apparently favourable connection between yaws and vaccination, his suggestions do not appear to have entirely fallen in with the views of other West Indian observers, but still, at first sight, the incidence of the disease, as it occurs in the Malay Native States, seems to support his original ideas. Judging from the scars of "puru ibu," which are as well remembered by Malays in after life as vaccination marks by Europeans, Puru has evidently been prevalent in Kelantan for many years.

It is significant to note that vaccination has never been attempted on any large scale in this uncivilised State. In the advanced States of Perak and Selangor, on the other hand, where the mixed populations are now more or less thoroughly protected by vaccination from small-pox, yaws is becoming comparatively uncommon. Puru, again, was very prevalent in the State of Pahang nine or ten years ago and this has been followed by a marked decline. Prior to 1896 there were only 13 cases of vaccination in the Pahang Annual Medical Reports. At the present time the registered number has probably far exceeded 20,000 cases. The Malays of the Federated Malay States now believe in vaccination. They often attribute an apparent immunity of Europeans to puru to the fact that speaking generally all European residents have been well vaccinated in childhood. This view is probably erroneous. There seems to be a better reason. Dr. C. W. Daniels (the Director of the Institute for Medical Research, Federated Malay States) tells me that European children of the lower classes mix freely with native children in Fiji and in the West Indies. They are

in this way directly exposed to the contagion and often suffer from yaws in consequence. It would be quite exceptional, on the other hand, for European children to have many native playmates in places where puru is common. Good opportunities for mixing freely with children of their own age in the native towns and villages of Malaya are seldom given them. It is more practical to account for the apparent immunity of Europeans to puru by explaining that they are not really very much exposed to the contagion. As a matter of fact, most Europeans are rather prone to avoid contact with this loathsome disease.

Referring again to the alleged influence of vaccination, it must also be borne in mind that it has not yet been actually proved to exist in the other warm climates in which yaws is common, and it must be remembered that the principles of sanitary science have been introduced by the Government of the Federated Malay States coincidentally with the introduction of vaccination into the older States of Perak and Selangor, and extended more recently into the State of Pahang. The intrinsic value of vaccination, if any, as a preventative to the occurrence of the disease in Kelantan, where the people are ignorant of the principles of modern sanitation and are exposed to epidemics of small-pox, remains yet to be seen.

I am much indebted to Mr. R. W. Duff for his kindness in helping me to prepare these notes, and to Ungku Saiyid Hussein (a Malay noble), for his cordial collaboration. Botanical specimens of most of the plants referred to are sent with this paper to England, in the hope that they may be of interest to the Therapeutical Society. They have all been obtained in Kelantan; most of them from a hamlet—Kampong Kutan—near Kota Bharu (the Capital), others from different parts of the State. These drugs are used empirically, and, speaking generally, are well known to most Kelantan natives, but Malays are naturally reticent, and it is not easy to win secrets from the native "pawangs" (witch doctors), or to obtain information from the "bomors" or medicine-men, by which to differentiate their particular therapeutic virtues. I am indebted to Mr. H. N. Ridley, F.L.S., the director of the Botanic Gardens, Singapore, for his kindness in classifying the plants, and to Mr. P. Burgess, M.A., Government Analyst, S.S., for his examination of the mineral known as "tebah tikus," or ratsbane.

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ZAMBESI ULCER.

By L. E. ASHLEY-EMILE, L.R.C.P., L.R.C.S.Edin., L.F.P.S.Glas.

Definition.—A phagedænic ulcer of hitherto undefined origin, occurring in certain parts of tropical and sub-tropical Africa, and characterised by extensive necrosis, and sometimes great deformity of limb.

Geographical Distribution.—Is wide-spread, occurring, as its name implies, in Zambesia, particularly in the province of Mozambique, where it is recognised as Mozambique or Zambesi Ulcer. The ulcer is also met with in adjacent parts of Africa north and south of the Zambesi River. In East Africa the ulcer was known to the early explorers, Speke, Burton, Cameron, &c., who themselves and their followers suffered greatly from it, while the immortal Livingstone also suffered from these troublesome ulcers during his journey up the Zambesi.

South of the Zambesi these ulcers have different names, dependent upon the locality where they happen to be contracted. On the south-eastern coast they are known as "Delagoa Sore," in Rhodesia "Rhodesian Sore," in Natal "Natal Sore," while in the Transvaal and other parts of South Africa the nomenclature changes to "Veldt Sore."

Etiology: Age.—As the greater bulk of the native population residing in these parts have at some period suffered from these ulcers, I am inclined to think, after repeated attacks, immunity is afforded, since these ulcers are scarcely ever seen on aged persons. Adults of both sexes, and even children, are most susceptible to them.

Race.—Race does not afford any immunity. The natives are more frequently attacked owing to certain predisposing factors in their personal environment which renders them more susceptible, while the whites, residing under similar unhygienic surroundings, soon acquire them.

Social Conditions.—Labourers and others working in plantations who constantly walk through jungle or bush are easily affected, while those whose occupation necessitates confinement indoors generally escape when the ordinary precaution is taken in the matter of their dwellings, for in the Zambesi Valley most houses are built of bamboo and reed, with plank floors, which form suitable nidi for the breeding of all germ life, and those that effect an entrance from without are difficult—if not impossible—to eradicate, hence constant supervision is required in maintaining these huts habitable. Dress also plays an important *rôle*: persons whose extremities are unprotected by suitable boots and leggings invariably contract them.

Personal Conditions.—All debilitating causes, such as malaria, alcohol (C_2H_6O), by undermining the system, are the most potent factors in the rapid spread and break down of the ulcer into the phagedænic type.

Exciting Causes.—Hitherto the cause of these ulcers has not been described by any one. On referring to Dr. Manson's valuable book on Tropical Medicine under the heading of "Sloughing Phagedæna," he states: "Cause unknown, probably due to saprophytes." I may, then, lay claim to the unique distinction of being first in the field in bringing to notice the cause of these ulcers, which has hitherto remained in obscurity, and evaded elucidation by many eminent observers in tropical medicine who have resided in Zambesia.

During my sojourn there, I extracted from the leg of one of the white engineers employed in the sugar plantation certain grubs which I brought down to Capetown for examination. Mr. L. Peringuey, Assistant Director of the South African Museum, very kindly examined them for me, and pronounced them

to be the larvæ of a dipterous fly, analogous to that described by Blanchard. A translation from his paper, in French, describing these larvæ is as follows:—

"I have already alluded to the larva of a muscid fly extracted by Dr. Kirk (Sir John Kirk) from the leg of a famous explorer, Livingstone, during his journey to the Zambesi. This larva, which was given by Kirk to Cobbold, was deposited by him in the collection of the Royal College of Surgeons. It is there now (bottle 196). We have been able to examine it, and have been able to have it drawn. It is entirely white, 5 mm. long, 2 mm. wide, somewhat depressed, and without hooks either round the mouth, or on the surface, or the segments. The latter have scattered spinules seemingly irregularly set, and not numerous. The head is not very distinct, and the eleventh ultimate segment is provided in its median part with two stigmatic orifices. It is quite plain that this larva is not much developed, and that it belongs to the Muscidæ, but one cannot be certain of its affinities."

The larva discovered by me is totally unlike the grub of *Bengueyella depressa* deposited on the body of man, or even it is said of dogs in Natal, the Transvaal, Delagoa Bay, and also in Senegal.

Habitat.—After several fruitless attempts to locate the habitat of these larvæ, I was fortunate enough to discover in the long grass on the banks of the Zambesi a specimen identical with that extracted from the ulcer mentioned above. I am, therefore, of opinion that the long grass is the natural situation of these larvæ while undergoing the various metamorphic changes.

Mode of Infection.—This takes place in two ways. (1) Directly, *e.g.*, when walking through grass or bush the larva adheres to the naked legs, and thereby effects an entrance. Natives are chiefly affected in this manner. (2) Indirectly, when it adheres to the clothes or boots and is carried into dwelling places and there deposited either by native servants or others working in fields and plantations. Carelessness on the part of persons in walking about barefooted brings about infection. The larva soon adheres to the naked surface, and rapidly burrows beneath the skin.

Progress after Invasion.—The larva having adhered to the skin by means of its spinules rapidly burrows beneath the epidermis into the subcutaneous tissue, preferably along the root of a hair follicle, where it lies coiled up embracing the hair root. In appearance it resembles a pimple having a central black spot, and when rolled beneath the fingers feels shot-like. This stage—which may be termed the stage of invasion—generally takes about twelve hours, at the end of which period the larva excretes a pale yellow fluid which has marked irritant properties, and which gives rise to great irritation, resulting in the formation of a hyperæmic areola round the papule. The central black spot, which is the embedded larva, now disappears under the superficial fascia, leaving a small vesicle in its place—the fluid being the excretion given off.

The only prominent symptom at this stage is intense itchiness, which requires great resolution on the part of the patient from scratching it. The vesicle gradually enlarges, and if unruptured prematurely attains the size of a small marble. The vesicular stage lasts for about three to five days.

Ulcerative Stage.—After the bleb has burst, a small circular opening is seen in the superficial fascia, plugged by a thick yellow discharge consisting of broken-down *débris*. On passing a probe into the opening, one is surprised to find that the instrument passes into a funnel-shaped cavity for at least half an inch in depth, the base of which is about an inch in diameter, the roof consisting of the superficial fascia, which is now rapidly undergoing disintegration. At the end of the first week the superficial fascia gives way, leaving a circular ulcer about half an inch in diameter with sharply-cut margins. During the second week the ulcer becomes fully established, and attains its distinctive characters, being circular in shape, the margin is smooth, elevated and indurated with sharply-cut edges, slightly insensible to touch, and surrounded by an areola of congestion, dusky red in appearance. Beyond the areola the part is œdematous, spreading for a long way up the leg. The base of the ulcer is very characteristic—it has a hollow, punched-out appearance of a bright red colour, very irregular, due to the entire surface being studded with small papillæ which vary in colour from greenish blue to bright red, and fleshy looking. Each papilla at its apex presents a crypt through which the broken down *débris* is discharged in the form of a thread-like process very similar to mycelia. These processes are yellowish-white in colour, soft and cheesy in consistence, and best viewed when the leg is immersed in water, when they spread out, and can then be easily traced to the underlying crypt in the papilla. These processes with epithelial cells and pus corpuscles constitute the slough, which forms a stringy, gelatinous, adherent mass. When scooped away, the ulcer presents a red surface studded with white points, the latter being the remains of the processes at the apex of the papillæ. These points are of great importance, both from a diagnostic and therapeutic point of view. Should the ulcer remain untreated, the underlying muscles become involved in the necrosis and slough away, leading ultimately to the destruction of the periosteum and denudation of the bone. The resulting deformity which takes place in these severe cases is due chiefly to muscular action, since the extensors are invariably affected, the flexors alone acting produce a kind of *Talipes equinus*.

Site.—The most favourable situation for these ulcers is the lower third of leg on its anterior aspect. The dorsum of foot, middle third of leg and thigh, follow in order of invasion. I have never seen a typical ulcer on the body or upper extremity, which fact is not now so surprising after our recent knowledge of its etiology.

Symptoms.—The symptoms are rather vague and ill-defined, occurring as it does in malarious countries, the few symptoms engendered by the ulcer are masked by those of malaria and its complications. The most prominent symptom, however, is intense itchiness, which is most distressing to the patient, since it is more severe at night than in the day, and thereby preventing sleep and inducing loss of health and debility. Pyrexia is felt during the ulcerative stage.

Diagnosis.—To the young practitioner arriving in

the Tropics for the first time, and unacquainted with the nature of these ulcers, the diagnosis is extremely difficult, in the great majority of cases his examination being superficially conducted, especially where natives are concerned, and his results based entirely on inspection, when the circular shape, indurated margin, sharply-cut edges surrounded by an areola of dusky redness and invariably situated on the lower third of leg, facts which present a picture only too familiar, that the unwary observer, without further consideration, pronounces in favour of its specific origin, and the unfortunate patient is submitted to a vigorous mercurial treatment—alas! with disappointing results. Only by careful examination of the base, by removing the slough when the characteristic white points, the remains of the processes at the apex of the papillæ, are seen, then the true nature of these ulcers is distinguished.

Having once appreciated the appearance, the observer is unlikely to repeat the pardonable error of his previous diagnosis.

Zambesi ulcers have often been mistaken for Scorbutic Ulcers. The absence of the usual characters of the latter, viz., the spongy, dark-coloured, strongly-adherent fœtid crust, the removal of which is attended with free bleeding and followed by the rapid reproduction of the same material, and the absence of scorbutic symptoms elsewhere, should present little difficulty in differentiating between them.

Prognosis.—Is very favourable if treatment is undertaken in the early ulcerative stage before the necrosis has extended to the underlying muscles. The chronic nature of these ulcers must be borne in mind and duly impressed on the patient. The native mind will, however, find it difficult to grasp such a fact, and after submitting to treatment for a week, and not noticing phenomenal results from the white doctor's medicine, invariably seek consolation in their own method, which consists of plastering the ulcer over with a paste made from the leaves of the Neem Tree ("Pride of India,") which thrives in the Zambesi Valley. I have seen some good results follow its empirical use. In those less fortunate cases where, from lack of proper treatment, all the soft parts are destroyed, the prognosis must necessarily be unfavourable as far as regeneration of tissue is concerned, the resulting deformity then being inevitable.

Healing Process.—The reparative process is in direct proportion to the extent of necrosis and destruction of the soft parts. The average duration, however, is from one to two months. When suitably treated four distinct stages are apparent, which should be carefully noted as indicating the index of progress of each case.

First Stage.—The slough alters in character. Instead of the thick adherent mass, it assumes a more liquid form. On minute examination, the *débris* previously seen in the form of processes loses its homogeneous character and undergoes disintegration. The epithelial cells diminish and pus cells predominate, and the entire discharge is reduced in quantity. The base has a mottled appearance, and the papillæ stand out prominently.

Second Stage.—The papillæ are absorbed and disappear. The base presents, instead of the previous mottled appearance, a uniform red surface.

Third Stage.—Granulation tissue makes its appearance. At first the granulations are large, flabby, semi-translucent and friable, breaking down readily from excess of indolence, and being replaced by healthy granulations. The base is level, or nearly so, the edges are smooth and shelving, and extend in the form of a bluish-white film over the marginal granulations, the surrounding cellulitis rapidly subsides.

Fourth Stage.—After the ulcer has healed over and the granulation tissue converted into fibrous tissue, this latter contracts, leaving a slightly depressed cicatrix surrounded by a pigmented surface.

Treatment.—Prophylactic. In view of our knowledge bearing on the habitat of these larvæ, every endeavour should, if possible, be made to avoid walking through the long grass and dense bush in these regions. Labourers and others working in plantations should wear boots, and have their lower extremities well protected by means of suitable leggings or putties, which should be taken off in a separate apartment after the day's work, and the clothing well brushed. The habit of walking about barefooted should in all cases be discountenanced. Floors of apartments should be kept scrupulously clean, and scrubbed with Jeyes' Fluid, or any other disinfectant, at least once a week.

Curative.—In the early stage, when the larva appears as a central black spot embedded in the pimple under the skin, it can be quickly extracted by means of a needle or sharp pointed instrument. Since it adheres tenaciously by means of its spinules, a little care and patience is needed in dissecting it out *in toto*. After it has burrowed through the superficial fascia, extraction is well nigh impossible. It should then be destroyed by means of some powerful germicide, for which purpose I prefer the crystals of permanganate of potassium, rubbed well into the little wound. When the ulcer is fully established, the best plan is to anæsthetise the patient, and scrape the base of ulcer, taking care to remove effectually all the papillæ until no more white points are visible. The ulcer should then be cauterised with pure carbolic acid and dressed in the usual manner.

In those cases where the above plan is inadmissible, I have found the following just as efficacious, though the reparative stage is more protracted.

After removing the slough, the limb is immersed in warm perchloride of mercury lotion for at least fifteen minutes daily. The papillæ are destroyed by touching them with sulphate of copper crystals, and dressed with the following ointment:—

℞:	Sulph. Sublimatis	grs. xx.
	Acidi Salicylici	grs. xxx.
	Zinci Oxidi	grs. xxx.
	Amyli	grs. xx.
	Vaseline	.. ℥j."

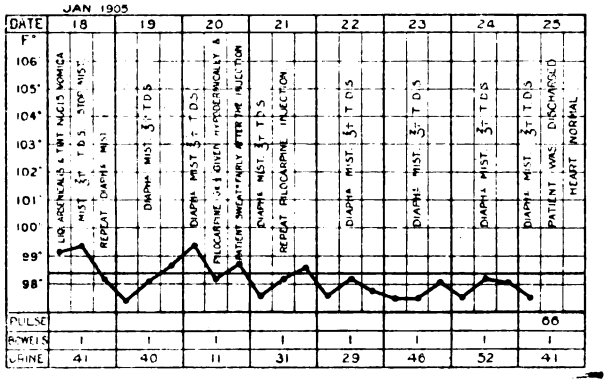
THE French Académie de Médecin has awarded, through the Minister of the Interior, a silver medal to Dr. Alan Green, Bacteriologist in charge of the Vaccine Lymph Department, Lister Institute of Preventive Medicine, for his work on Vaccine, published in the *Proceedings of the Royal Society*, and in the Report of the Medical Officer, Local Government Board.

ON THE EFFECT OF PILOCARPINE IN BERI-BERI (WET TYPE).

By P. N. Gerrard, B.A., etc., Dublin, D.T.M.H. Cantab., District Surgeon, Krian, Perak.

Chan Sing, Chinese, M., 38, a miner, Reg. No. 2,155, eight years in the F.M.S., was admitted to the wards of the District Hospital, Larut (Taiping), on October 17th, 1904. From the 17th afternoon till the morning after his admission he had passed five motions containing blood and mucus.

He was diagnosed dysentery, and put on the French treatment (mag. sulph., &c.). The dysentery did not yield, however, and the treatment was changed on the 20th to pulv. ipecac. co. and bismuth, the frequency of the motions diminished to three daily, but as the mucus continued to appear in the stools he was put back on mag. sulph., with formalin added; this caused no improvement, and after two days, *i.e.*, on the 24th, he was again changed on to salol, bismuth, and Dover. This caused a diminution in the number of the stools from 3 to 1 or 2 daily, but on 27th blood again appeared in the motions, and ipecac. cōsoda was exhibited.



From that date, October 27th, until November 29th the "changes were rung" on mag. sulph. pulv. ipecac., ipecac. and opium pills, santonine, quinine in various combination, until, on November 10th, he was put on pil. hydrarg. with ipecac., which apparently started an improvement in his condition, and on the 29th his dysentery (?) was to all appearances cured.

On December 3rd incipient beri-beri was diagnosed, and some pretibial œdema appeared. A creasote mixture was exhibited which caused some improvement in his general condition, but had no effect upon the œdema. On the 7th the urine had diminished to 26 oz., and the œdema was more boggy. On the 11th he passed 61 oz. urine, but the œdema continued to increase. The creasote mixture was stopped on the 12th, and a calomel purge given, his œdema on this date being "very soft and boggy," pulse very slow, and urine only 34 oz. in 24 hours. On 19th some mucus appeared again in the stools, and castor oil was given, followed by thymol, no anchylostoma or other ova were discovered.

On the 20th the creasote mixture was again commenced, but as it caused an aggravation of his general condition on his own showing, it was permanently stopped on the 14th, and a mild diaphoretic mixture prescribed with $\frac{1}{8}$ grain pilocarpine hypodermically. This was repeated on the 26th, 29th, 31st, the doses being $\frac{1}{8}$ grain on the 26th and 29th, and $\frac{1}{6}$ on the 24th and 31st.

On January 3rd the note on his condition reads: "Œdema subsiding rapidly; mitral murmur still present."

On January 5th pilocarpine was repeated, and on 9th there was no œdema perceptible.

On January 11th, his improvement being maintained without further treatment, he was given an arsenic and nux vomica mixture as a tonic preparatory to his discharge, but on 18th the œdema reappeared, the temperature rose to 99·4, and I considered it advisable to recommence the injection and diaphoretic mixture. He had $\frac{1}{8}$ grain pilocarpine daily from that date, and on January 22nd the œdema was "hardly perceptible." On January 25th it had disappeared, and his heart sounds were normal, his pulse 66; he was able to walk, run, and jump an 18-inch iron bar, and he was discharged at his own request.

While keeping in mind the fallacy that upon one case no general argument can be based, I nevertheless desire to give this case publicity, not so much on account of any novelty in the treatment, which man have been adopted before, but rather as a type of a series of similar cases which I have recently had at the District Hospital, Taiping, in the beri-beri wards, and, furthermore, I regret to say, because this case is one of the only well-written-up cases in the series.

Several interesting points and speculations suggest themselves on looking through these notes. Firstly, perhaps, the prolonged obstinate discharge of mucus, and occasionally blood, per anum. Was it dysentery, properly speaking? By which question I mean to ask, Was it a disease of the intestines caused by the amœba histolytica coli, or the bacilli of dysentery (Shiga, Flexner, &c.), or was it an inflammation due to some slower acting micro-organism, or to an irritative toxin?

We now know that in beri-beri the stomach, and intestines almost through their entire length, are affected, and that there is really no substantial reason to prevent us from specifying beri-beri as a disease caused by an acute intestinal intoxication, and, again, the fact that cases of irregular dysentery very frequently result in beri-beri here (where beri-beri is endemic) would point to the original disease in this case being a beri-beric enteritis and colitis. The intestinal inflammation taking place on the invasion of the intestine by an organism or on account of an irritating toxin circulating for some time over the mucous membrane, the absorption of the products of which organism or toxin eventually accumulated to produce the neuritis.

But the most interesting point about the case is, I submit, the rapidity with which pilocarpine acted upon not only the œdema but apparently the disease itself, almost as if it had caused the secretion in the urine and sweat of the toxin.

On December 24th, pilocarpine was first administered, and on January 3rd, that is ten days later after he had had five injections only, we find in his bedside notes: "Œdema rapidly subsiding," and on January 5th, after his sixth injection, the œdema was "slight."

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Colonial Medical Reports, No. 11.—Hong Kong (*continued*).

TABLE V.

LIST OF OPERATIONS PERFORMED IN 1904.

Surgical Operation.	Number.	Deaths.
Operations on Organs of Locomotion :—		
Amputation of thigh	1	1
,, ,, leg	6	1
,, ,, toes	8	...
,, ,, arm	7	2
,, ,, forearm	1	1
,, ,, forearm (both in same patient)	1	1
,, ,, hand	2	...
,, ,, fingers	3	...
Suppurating bursa	1	...
Breaking down adhesions in knee-joint	1	...
Suturing tendons	1	...
Removal of Tumours :—		
Buboes incised	31	...
Buboes scraped or removed	18	...
Ovarian tumour	1	1
Keloid growth	1	...
Sarcoma (arm)	2	...
Cysts	5	...
Carbuncle	1	...
Eye operations :—		
Cataract	2	...
Pterygium	1	...
Trichiasis	1	...
Iridectomy	1	1
Trachoma	1	...
Operations on Genito-urinary system :—		
Hydrocele tapped	2	...
,, radical cure	7	...
Circumcision	22	...
Ruptured urethra	1	...
Stricture of urethra	5	...
Hernia testis	1	...
Phimosis	1	...
Operations on Digestive System :—		
Hernia (strangulated)	1	1
Hepatic abscess	2	...
Hæmorrhoids	6	...
Exploring liver	2	...
Fistula in ano	5	...
Paracentesis abdominalis	4	...
Abdominal section (exploratory)	3	3
,, ,, (ruptured intestine)	1	1
,, ,, (purulent peritonitis)	1	1
,, ,, (intussusception)	1	1
Appendicitis	1	...
Carried forward	163	14

Surgical Operation.	Number.	Deaths.
Brought forward	163	14
Wounds of thigh	1	...
,, ,, leg	2	...
,, ,, arm	3	...
,, ,, chest	2	...
,, ,, abdomen	2	...
,, ,, scrotum	1	...
,, ,, hand	1	...
,, ,, skull (trephining)	3	3
General Abscesses :—		
Abscess of lumbar region	1	...
,, breast	1	...
,, thigh	1	...
,, leg	1	...
,, scrotum	5	...
,, neck	13	...
,, perinæum	1	...
,, arm	4	...
,, scalp	4	...
,, orbit	1	...
,, iliac	1	...
,, foot	6	...
,, hand	9	...
,, buttock	2	...
,, ischio-rectal	6	...
,, axilla	1	...
,, cheek	2	...
,, jaw	4	...
,, lachrymal	1	...
General operations :—		
Necrosis	8	...
Cellulitis	1	...
Sloughing phagædena	10	...
Sinus	6	...
Resection	1	...
Excision of spleen	1	1
Needle in hand (removal of)	1	...
Paracentesis thoracis	1	...
Parturition :—		
Placenta Prævia	1	1
Forceps	6	1
Adherent placenta	1	...
Extrauterine fœtation	1	...
Retained placenta	1	...
Curetting uterus	2	...
Total	283	20

TABLE VII.

ADMISSIONS INTO AND DEATHS IN THE GOVERNMENT MATERNITY HOSPITAL DURING EACH MONTH OF 1904.

Months.	Europeans		Chinese		Japanese		Total	
	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths
January	6	..	...	...	...	...	6	...
February	3	...	2	...	1	...	6	...
March	..	...	1	...	...	...	1	..
April	2	...	1	...	...	...	3	...
May	1	...	10	...	1	...	12	...
June	3	...	1	...	...	...	4	...
July	4	...	2	1	1	...	7	1
August	6	...	...	...	1	...	7	..
September	4	...	1	1	...	...	5	1
October	3	...	1	...	3	...	7	...
November	...	...	6	...	3	...	9	...
December	3	...	1	...	1	...	5	...
Total	35	...	26	2	11	...	72	2

RETURN OF DISEASES AND DEATHS IN 1904 AT THE

Government Civil Hospital, and Victoria Hospital, Hong Kong.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	57	—	57
Anæmia	11	1	11
Anthrax	—	—	—
Beri-beri	70	8	70
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	—	—	—
Cholera	1	1	1
Choleraic Diarrhœa	—	—	—
Congenital Malformation	3	—	3
Debility	73	9	73
Delirium Tremens	—	—	—
Dengue	45	—	45
Diabetes Mellitus	1	—	1
Diabetes Insipidus	1	—	1
Diphtheria	3	1	3
Dysentery	113	6	113
Enteric Fever	45	10	45
Erysipelas	1	—	1
Febricula	130	—	130
Filariasis	—	—	—
Gonorrhœa	61	—	61
Gout	3	—	3
Hydrophobia	—	—	—
Influenza	—	—	—
Kala-Azar	—	—	—
Leprosy	—	—	—
(*a*) Nodular	—	—	—
(*b*) Anæsthetic	—	—	—
(*c*) Mixed	—	—	—
Malarial Fever—	226	2	226
(*a*) Intermittent—	—	—	—
Quotidian	—	—	—
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	—	—	—
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	1	—	1
Malta Fever	—	—	—
Measles	4	—	4
Mumps	3	—	3
New Growths—			
Non-malignant	8	—	8
Malignant	7	2	7
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	5	3	5
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	1	—	1
Rheumatism	74	—	74
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	—	—	—
Septicæmia	3	2	3
Sleeping Sickness	—	—	—
Sloughing Phagedæna	5	—	5
Small-pox	3	—	3
Syphilis—			
(*a*) Primary	18	—	18
(*b*) Secondary	61	—	61
(*c*) Tertiary	—	—	—
(*d*) Congenital	2	—	2
Tetanus	—	—	—
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	3	—	3
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
GENERAL DISEASES—*continued.*			
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	4	—	4
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	67	—	67
Circulatory System—	27	4	27
(*a*) Valvular Disease of Heart	—	—	—
(*b*) Other Diseases	—	—	—
Digestive System—	275	4	275
(*a*) Diarrhœa	—	—	—
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	—
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	—	—	—
(*g*) Cirrhosis of Liver	—	—	—
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	—	—	—
Ear	11	—	11
Eye	79	—	79
Generative System—			
Male Organs	79	—	79
Female Organs	19	1	19
Lymphatic System	60	—	60
Nervous System	59	7	59
Nose	—	—	—
Organs of Locomotion	63	—	63
Respiratory System	242	29	242
Skin—	40	—	40
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	—	—	—
(*f*) Other Diseases	—	—	—
Urinary System	29	8	29
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	23	2	23
(*c*) Other Injuries	475	31	475
Parasites—	18	2	18
Ascaris lumbricoides	—	—	—
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	—	—	—
Surgical Operations—			
Amputations, Major	—	—	—
,, Minor	—	—	—
Other Operations	—	—	—
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—



Musah, one of the Resident's boatmen.—Puru duriyan of hands and foot, acute, ill 14 days. He had Puru in childhood, no history of syphilis. Photographed at Kota Bharu, August 14, 1904. Now cured October 20, 1904.



Puru siput ("*siput*," *lit. a shell*).
Photographed at Kota Bharu, September, 1904.
Kelantan villagers.



Puru mata kerbau
(mata, lit. an eye; kerbau, a buffalo).
Photographed at Kuala Takar, August 8, 1904.
Kelantan villagers.



Puru siput.
The children of Tengku Petra Semara, a Kelantan Rajah. No history of syphilis, ill three months. Photographed in his palace at Kota Bharu. August 15, 1904.
Kelantan natives.

To illustrate article by John D. Gimlette, M.R.C.S., L.R.C.P., on "Notes on some methods employed by Kelantan Malays in the treatment of Puru or Yaws."

TABLE VIII.

VARIETIES OF MALARIAL FEVERS OCCURRING MONTHLY AT GOVERNMENT CIVIL HOSPITAL DURING 1904.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Quartan	1	...	...	...	...	...	...	..	1	1	1	...	4
Simple tertian	...	1	1	...	1	2	3	6	4	10	3	2	33
Malignant	4	4	...	4	9	13	30	26	30	19	31	12	182
Mixed infections	2	...	...	2	..	2	4	2	..	1	2	...	15
Total ...	7	5	1	6	10	17	37	34	35	31	37	14	234
Percentage to cases admitted	2·62	3·06	0·65	2·94	4·65	8·01	14·45	14·22	16·20	12·75	15·87	7·56	9·05

METEOROLOGICAL RETURN FOR YEAR 1904.

Month	Barometer at M.S.L.	Temperature			Humidity		Cloudiness	Sunshine	Rain	Wind	
		Max.	Mean	Min.	Re	Abs.				Vel.	Dir.
January	30·20	64·9	59·5	55·4	72	0·37	49	185·2	0·120	13·8	E by N
February	30·12	68·1	62·6	58·5	69	0·40	37	207·5	0·200	13·9	E
March	30·00	67·0	63·2	60·3	87	0·51	97	29·7	3·755	14·6	E by N
April	29·96	75·2	70·7	67·8	86	0·65	83	112·4	1·905	14·8	E
May	29·88	80·8	75·6	71·8	83	0·74	73	148·0	7·705	12·8	E by S
June	29·72	85·0	79·8	76·0	83	0·84	72	162·1	19·640	9·9	SE by E
July	29·67	85·9	81·1	77·9	82	0·88	76	147·4	7·225	10·9	SSW
August	29·70	86·0	80·8	77·2	83	0·87	68	172·6	27·640	13·2	E by S
September	29·88	85·0	80·2	76·3	81	0·84	66	161·3	9·770	11·5	E
October...	30·01	80·1	76·5	73.3	74	0·68	58	191·2	2·005	14·1	E by N
November	30·15	74·0	68·8	64·6	62	0·45	55	187·3	0·215	13·1	ENE
December	30·23	66·1	60·7	55·7	62	0·34	45	201·7	0·230	10·6	ENE

APPENDIX.

RUPTURED TUBAL PREGNANCY. OPERATION. RECOVERY.

A Chinese, aged 27, was admitted to hospital on May 25th, 1904, having been seen three hours previously by Dr. Jordan, who, on the above diagnosis, advised her immediate removal with a view to operation.

On admission patient was very blanched, with a quick-running pulse (156) and complaining of great abdominal pain. The operation was at once proceeded with, Dr. Koch kindly giving chloroform. The abdomen was opened in the middle line and blood and blood clot rapidly cleared out. A fœtus, between fourth and fifth month, was found. The pregnancy had occurred in the right tube close to its entrance into the uterine cavity. The placenta was growing on the uterus. The peritoneal covering around this was incised and the whole sliced off, opening the uterine cavity by a hole which admitted the tip of the little finger. This was closed with six thick silk sutures and the abdominal cavity washed out with saline fluid and closed with silk.

For forty-eight hours the patient's condition was very critical, requiring close nursing and constant stimulation (strychnia, camphor, &c.). The temperature rose on the fifth day to 105°. And the os was then dilated, giving exit to a decidual membrane, which at once reduced the temperature. The abdominal incision healed without any trouble and the patient was discharged on June 13th quite well.

Remarks.—The rate of mortality for this operation being so high, successful cases are worth reporting. It is extremely fortunate for this patient that her husband had the good sense to send for a medical man and to follow his advice. The treatment and the special condition met with are also somewhat out of the ordinary. None of the books at our disposal mention the possibility of the placenta being attached to the uterus, nor what should be the line of treatment under this condition.

TYPHOID FEVER WITH COMPLICATIONS. RECOVERY.

Two Cases with Jaundice and Glycosuria.

(1) European male, aged 32, admitted with fever. Patient was very ill, dry tongue, great restlessness and very tremulous, having been drinking heavily. Jaundice was well marked and the urine, on examination, showed a trace of albumen and sugar (gr. i. to ʒj.). This patient had a very severe attack indeed, being delirious for days, great abdominal distensions, passing his motions in bed and several severe hæmorrhages from the bowel. Jaundice disappeared on the twenty-second day, and the sugar on the seventeenth. His temperature fell to normal on the eighteenth day,

was intermittent for another three days before finally keeping normal. He was seventy-four days in hospital and lost considerably in weight.

(2) Japanese adult, aged 37, was admitted on the eighth day of the fever with a dry, furred tongue, well-marked jaundice, liquid yellow stools and delirium. His urine showed a trace of albumen and sugar (gr. i. to ʒj.). The delirium persisted to the twenty-fifth day. Widal's reaction was positive on the eighteenth day. The jaundice persisted up to the twenty-second and the sugar to the twentieth day.

The temperature was normal on the sixteenth day, and then intermittent up to the fortieth, when he had an alarming hæmorrhage from the bowel and finally remained normal on the fifty-fifth day. The patient spent sixty-three days in hospital.

Remarks. — Both these complications are rare. "Sugar is rarely found in the urine" (Brannan, "Twentieth Century of Medicine"). "Jaundice is a symptom of extreme rarity" (*idem*). Murchison only met with three cases, all fatal. Both of the above cases were extremely ill and tested the nursing to the utmost. The treatment throughout was symptomatic only.

A Case with Acute Dysentery.

A French sailor from Saigon was admitted on July 5th, 1904, with a history of twelve days' fever of a remittent type, accompanied by diarrhœa, furred tongue and general malaise. The fever fell to normal on the twenty-seventh day, and the following day the diarrhœa increased in frequency, the stools being full of bloody mucus with amœbæ. The patient was treated with salines and chloride of calcium, but as the condition did not improve much a daily enema of ipecacuanha ʒij. was given as well. The dysentery was, however, very obstinate to treatment and naturally made the convalescence slow and tedious. The patient eventually recovered and left for France on September 6th.

Remarks. — This association is somewhat rare, though it has been mentioned by various observers. No doubt the double infection was acquired at the same time and the incubation period of the dysentery prolonged by the typhoid infection.

Acute Glossitis following Tonsillitis.

A European female, aged 28, was admitted to hospital on May 20th. She had been under treatment for three days previously for acute tonsillitis with high fever (104°). The day before the temperature fell to normal and swallowing was fairly easy. On the morning of the 20th she first complained of the increased size of her tongue and swallowing again became troublesome. Free incisions were made in the tongue by her medical attendant (Dr. Rennie) and her removal to hospital advised in case further interference should be necessary. On admission her temperature was 101°, the tongue was very foul and much enlarged, protruding from the mouth for about one inch, and the patient was quite unable to talk. Four grs. of calomel were at once given and four-hourly mixture containing V. aconiti mjii. and liq. ammon. acetat. ʒij., with ice to suck. As the incisions were bleeding freely no further treatment in this direction was adopted.

The condition slowly and steadily improved and in four days' time the patient was able to take semi-solid food and talk. The tongue was now well inside the mouth and half the original size. On the 27th both the tongue and throat were quite normal, and the patient was discharged.

Remarks.—From personal experience and from the literature at our disposal, this condition is evidently a rare one and worth reporting. The condition looked alarming on admission, and in view of the rapid increase in size the possibility of tracheotomy was considered. The free and early incisions no doubt saved the necessity for this serious operation.

Liver Abscess. Operation. Second Operation three and a half months later. Recovery.

A German, aged 43, was admitted on January 23rd, suffering from dysentery, fever and pain in right side. Stools contained blood and mucus, but no amœbæ. Temperature chart was of an irregular remittent type. Liver dulness was much increased downwards and a rub was heard all along right base. Under salines the dysentery ceased in three days, but as the hepatic symptoms continued, on January 29th the liver was explored and an abscess found. This was incised and a tube (silver) inserted. Though the cavity drained well the temperature still ran a remittent course, very suggestive of one or more other abscesses.

The patient being very weak no further exploration was attempted, and the temperature finally fell to normal three weeks after the operation and did not rise again. The abscess healed without trouble. His weight increased from 9 to 10·10½ st., and he was discharged on March 31st.

Readmitted April 9th for ten days suffering from alcoholism. The operation wound was quite firm and he had no liver symptoms.

Readmitted on April 28th suffering from alcoholism, fever and pain on right side. The liver dulness was increased downwards, with tenderness along the lower border of the ribs. The temperature ranged between 99° and 103°, and there was a rub at right base. On May 10th the liver was again aspirated over the site of the previous incision and pus was found. The abscess was a very small one and a tube was inserted. The temperature again kept up for five days, but then fell to normal, and the abscess rapidly healed, and the patient was discharged on June 5th.

He was again in hospital on June 9th suffering from his old complaint—alcoholism—and was discharged on the 17th, having, meanwhile, as he gravely informed us, signed the pledge.

Remarks.—This is somewhat an unusual case and shows how much some patients can stand. He was very ill on both occasions when operated on, and even in the alcoholic visits suffered badly. The case is interesting, inasmuch as the first abscess seemed to be due to the dysentery, which was non-malarial and non-amœbic. Though dysentery is common enough here, liver abscess is comparatively rare, more especially amongst Indians, who, however, suffer badly from dysentery.

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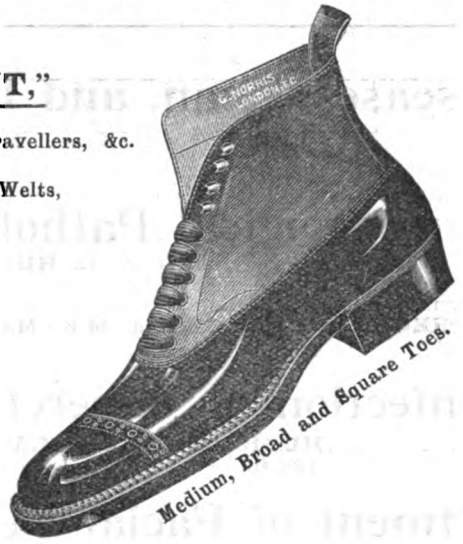
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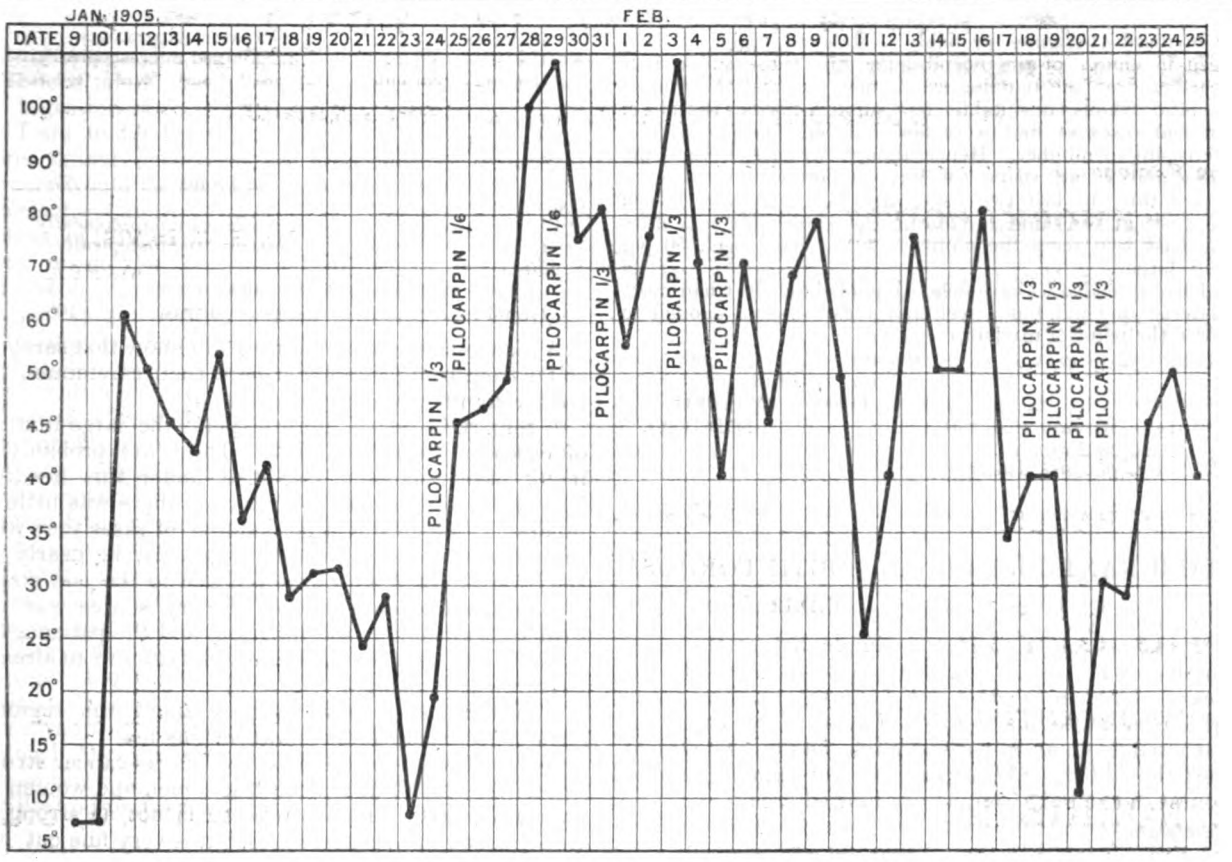
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On the 9th he had no "pretibial œdema." His attempted relapse, which started on January 18th, was completely aborted by four injections, one on each successive day (18th, 19th, 20th, and 21st), and on the 25th his condition was apparently normal. Another point of interest arises in connection with the relapse, he lost ground immediately he was put on arsenic and nux vomica, and after eight days of this mixture, during which time he continued to pass plenty of water, his œdema reappeared, and on stopping the arsenic and again administering pilocarpine he regained to normal in four days.

The average amount of urine passed during the fourteen days before pilocarpine was 35·7 oz. per diem; whilst getting an hypodermic of $\frac{1}{8}$ grain every other day (December 24th to January 6th), the daily average amount passed was 72·7 from 5th to 17th (no pilocarpine), the average was 57 oz. per day, and from the 18th to the 21st, while under pilocarpine for the second time, the average was 27·7 oz., and for the last three days before his discharge the average was 46·3 oz. Now, although mistakes in the collection of urine were no doubt made by the dressers, I would point out that such mistakes probably affect the periods of greatest amount of urinary secretion most, as they occurred presumably at the time the bowels were opened daily.

To what extent the diaphoretic mixture helped this case I am unable to state, but such mixtures do not usually have much effect upon the dry skin of beriberics.

The fall in the amount of urine secreted during the second pilocarpine period is curious, but as the entry for the 20th is 11 oz. it is probable that being well able to walk at this time the return is incorrect.

I shall be deeply obliged and pleased to acknowledge any reports of the action of pilocarpine in beri-beri, and also any reports which may be made upon the chemical composition of the urine and sweat in these cases. The rise of temperature at the commencement of his relapse is interesting.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

DEAR SIR,—Having been more than usually busy lately I have but just opened my Tropical Journal for March 1st, 1905. Otherwise I think I should have written before to express my surprise at a sentence which occurs in your editorial entitled, "Cancer in British Colonies."

The sentence I speak of reads as follows:—

"It is probable that sarcoma, although rare in the Tropics, is yet more commonly met with than is carcinoma, but neither the one nor the other occurs except very occasionally."

The fact that such a statement should come from the pen of the Editor of the TROPICAL MEDICINE must be taken to prove the truth of the fact stated to us who are but isolated observers in a very limited area; but what I would like to prove in this letter is that, however true the statement may be, considered in its general aspect, there are areas—at least one in which I work—which must be looked upon as exceptions to this rule.

The Tainan Mission Hospital is situated just within the Tropic of Cancer and receives patients from an area containing under one million souls. The majority of the inhabitants are Chinese, though there is a large sprinkling

of civilised Aborigines, probably of Malayan origin. I have been in charge of the hospital for only three and a half years, and as the building was a new one and the former hospital wholly unsuitable for surgical work, therefore, surgical cases at first were few, but have been gradually increasing in number. Hence, though my cases cover some three and a half years, the large majority of them were seen within the last two years, that is to say, had I seen the cases at the same rate during the whole time as I have the past two years the numbers would have been 50 per cent. larger.

I had intended to have delayed publishing till I had more material in hand, but I feel that I can append enough to prove the point of my letter.

I remain,
Yours faithfully,
JAMES L. MAXWELL,
M.D.Lond.

Tainan Mission Hospital,
South Formosa,
June 29th, 1905.

MALIGNANT DISEASE IN SOUTH FORMOSA.

By JAMES L. MAXWELL, M.D.Lond.

I PROPOSE first to give a simple list of the cases coming under my notice during the past three and a half years, and then to add a few comments on some points which seem to me worthy of note. The cases are gathered from an in-patient clinic totalling 6,000 odd, very few being taken from the out-patients who, of course, come only from a very limited area :—

Sarcomata of—			
Eye	4	2	examined microscopically
Nose	1		
Cheek	1		examined microscopically
Neck	1		,, ,,
Sterno-mastoid muscle	1		,, ,,
Maxilla	1		
Mandible	4	1	examined microscopically
Tibia	3	1	,, ,,
Meta-carpal bone (endosteal)	1	1	,, ,,
Great toe (melanotic)	1		,, ,,
Kidney	1		
Sheath of Great Pectoral muscle	1		examined microscopically
Great sciatic nerve (Neuro-sarcoma)	1		explored, but operator abandoned when position of tumour was evident
Lympho-sarcoma	2		
Total number of cases of sarcoma	28		
Carcinomata of			
Scalp	2		examined microscopically
Lip	5	3	,, ,,
Tongue	4		
Cheek (perforating epithelioma)	2	1	examined microscopically
Mouth	3	1	,, ,,
Jaw	5	3	,, ,,
Palate	1		
Orbit	1		
Pharynx	4		
Œsophagus	1		
Neck	17	4	examined microscopically
Parotid gland	1		
Breast (scirrhus)	9	6	examined microscopically
Both breasts (scirrhus)	1		
Pyloric end of stomach	1		Laparotomy-gastro-jejunostomy
Pancreas	1		exploratory laparotomy
Rectum	5	3	examined microscopically
Rectum (colloid)	1		,, ,,
Anus	2	1	,, ,,
Penis	5		,, ,,
Cervix uteri	5	2	,, ,,
Scar	1		,, ,,
Total number of cases of carcinoma	77		
Rodent Ulcer—			
Upper eye-lid	2	1	examined microscopically
Orbit	2		examined microscopically
Back	1		,, ,,
Total number of cases of rodent ulcer	5		
Grand total of cases of malignant disease	105		

A glance at the above figures will show that sarcoma so far from being commoner here than carcinoma, the former standing the latter as 1 to 3½.

A remark is called for to explain the large number of cases of cancer of neck. These are probably in many cases wrongly classified under this heading. That they were cancerous in nature there was little or no doubt; but in the large majority of cases they were probably secondary masses of glands, in nearly all they were in men who were reduced to the last stages of malignant cachexia, the primary source was not evident from cursory examination, and the patients too advanced to keep for further examination in an already overcrowded hospital.

I would add a few remarks about the regional occurrence of cancer as shown in this list.

Lip.—The proportion of cases of lip cancer strikes one as very small in a place where men and women all smoke tobacco. Chinese tobacco is not as strong as that smoked in Western lands, but is very fine cut. On the other hand, the pipes are either water-pipes or very long bamboo pipes, sometimes as long as 4 or 5 ft. Further, the pipe bowl is very small, only allowing a few whiffs before it has to be refilled. It follows from this that there is no such thing as a man walking about for perhaps an hour or more at a time with a pipe in his mouth constantly rubbing on the lips, as is quite commonly seen at home. Can it be that this rather than the tobacco itself is the predisposing cause of cancer of the lip in Western lands?

Tongue.—Even more striking is the comparative absence of cancer of the tongue. Syphilis is so dreadfully common that one sometimes wonders not what proportion of the population is attacked by the disease, but rather what proportion escapes? Yet gumma of the tongue is rare, and I have never seen a typical case of leukoplakia.

Alimentary Canal.—One of the most peculiar things is the rareness of cancer between the mouth and last few inches of the rectum. If one excludes the œsophagus, I can only record one case, viz., cancer of the pylorus. Another case of probable cancerous ulcer of the stomach I had under my care with an abscess of the lesser sac of the peritoneum, but I did not feel that my diagnosis was clear enough to include it in the list given above. At the same time, I feel that it is quite possible that a number of cases do escape diagnosis. For one thing, a large proportion of the population suffer from tropical splenomegaly, the spleen very frequently reaching beyond the umbilicus, and making the examination of other abdominal tumours very difficult. And for another, the Chinaman when attacked by abdominal complaints seems to be seized

by such a hatred of food that I believe frequently little or none is taken, and so the symptoms accompanying the ingestion of food are absent. I may be mistaken, but I am under the impression that in the hands of more skilled observers the proportion of intestinal cancers would be found to be considerably increased.

Breast.—Cancer of the breast forms a large proportion of the cases, larger without doubt than the cases in my list suggest. Four of the ten cases I have seen within the past six months; it is only as the people get accustomed to one that the patients with female diseases are willing to come into hospital, and even yet those of the better classes come in very small numbers.

Uterus.—What has been said of the breast applies with much greater force to uterine cancers. I believe they are quite common, and I could have included in my list several cases where every symptom pointed to cancer of the uterus, but where an examination could not be obtained.

Finally, there arises the very interesting question of race. At the present moment, I cannot spare the time to go into the question, and, further, the total number of cases given here is not large enough to make such an enquiry of great value; but I am myself stronglyof the opinion that the true Chinese suffer very much more from malignant disease than do the civilised Aborigines of the interior. As regards the savage races no investigation is possible owing to the warlike and murderous habits of these tribes.

"Medical News," July 25th, 1905.

The Cure of Leprosy.—J. Dyer in treating leprosy insists upon a full diet, hot baths twice daily, tonics and febrifuges, strychnine, chaulmoogra oil, long continuance of the treatment even after active signs of the disease have disappeared. Chaulmoogra oil should be given before meals, in capsules, hot milk or milk of magnesia. The oil should be given in 3 minim doses, and increased every second or third day until as much as 150 minims are given at each dose.

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Persons returning from the Tropics, and suffering from digestive troubles and bowel complaints, should give this treatment a trial. As a matter of fact, it may be said to be equal, if not superior, to the treatment in Plombières, as it is assisted by the medicinal waters of Harrogate, and the invalids, braced by the pure air of the Yorkshire moors, will not require the "after-cure" so necessary after a course of treatment at most continental spas.

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THE

Journal of Tropical Medicine

SEPTEMBER 15, 1905.

YELLOW FEVER IN NEW ORLEANS.

SOMETIME between June 1st and 15th, 1905, yellow fever reached New Orleans, carried thence it is supposed by ships with cargoes of fruit from Central America. It was not until July 13th that the presence of the disease was officially known to be present. Of the seven municipal districts into which the city is divided, there is but one seriously affected, and it is the district known as the Italian quarter of the city. Outside of the Italian quarter some eight cases only were known to have occurred in the city up to August 1st.

For many years the towns on the seaboard of the Gulf of Mexico have been accustomed every summer to enforce quarantine restrictions against arrivals from Havana. This year, however, the tables are turned, and Havana finds itself in the enviable position that, whilst yellow fever rages

in most of the large ports of the Gulf, the city remains free from any epidemic outbreak. The cause of this freedom of Havana from yellow fever is due to the sanitary regime enforced by General Wood when the city first came under the control of the United States authorities in 1898, and it would be well were New Orleans and other U.S. and Mexican cities to apply the methods adopted so successfully in Cuba. The methods are simple, namely, the destruction of mosquito breeding places within and immediately around the city, and the protection of yellow fever patients by mosquito nets. New Orleans is however, allowed to remain in the insanitary state which invites infection.

The drainage of the city is surface drainage, water is stored in large tanks, and the minor details of general cleanliness are neglected. Under such conditions mosquitoes breed in myriads, and it only required the introduction of the contagion to set an epidemic agoing. This factor was imported in June, the first case appeared on July 13th, and in two weeks 283 cases of yellow fever were reported. Major Ronald Ross, F.R.S., C.B., who, with Professor Boyce, F.R.S., went to New Orleans to ascertain the measures being adopted against yellow fever, and to render assistance if need be, report that the organisation for mosquito extinction in New Orleans has been organised on most efficient and thorough lines. The city is divided into districts, each with its responsible staff, public lectures are delivered on the means by which yellow fever is spread and on the steps necessary for each householder to take to ensure the eradication of mosquito larvæ. The lesson learned in Havana is being taught afresh in New Orleans, and we are prepared to hear that the results will be equally brilliant.

Books, Periodicals, &c.—In their booklet just received, Wm. Dawson and Sons, Ltd., Cannon House, Bream's Buildings, London, announce that they despatch by first mails any publication in the world ordered through them. They give a list of annual subscriptions to English and foreign newspapers, magazines, medical and scientific journals, &c. Medical men residing abroad would do well to note the firm's address.

LONDON SCHOOL OF TROPICAL MEDICINE.

Opening of Winter Session.

Inaugural Address by

Dr. G. H. F. Nuttall, F.R.S.

Student's Dinner.

The Autumn session of the London School of Tropical Medicine opens on Monday, October 2nd, 1905. During the past year new laboratories have been opened at the school and two new departments, one of Parasitology and one of Helminthology, have been established. The equipment of the school continually advances, but the increasing demands of tropical pathological teaching are so rapid and numerous that it is difficult to keep pace with even essential, let alone anticipated, requirements. The Annual Inaugural Address will be delivered by Dr. G. H. F. Nuttall, F.R.S., of Cambridge, on Wednesday, October 11th, at 3 p.m., in the lecture theatre of the school. On the same evening a dinner of past and present students will be held, under the presidency of Sir Ralph Moor, K.C.M.G. This is the first students' dinner ever held in connection with the school, and therefore the occasion should prove interesting. Of the many old students of the school, now numbering well over 500, the majority are stationed in the Tropics, and consequently the gathering at the dinner can but represent a fraction of those who might be, and who no doubt would wish to be, present. Medical practitioners in warm climates have so much in common to speak of; they have had to an extent and in a manner unknown to medical men in Britain to face so many difficult situations and "tight corners" in the practice of their profession, that the very fact of having practised in a tropical climate establishes a bond and *camaraderie* between medical men which promotes good fellowship and furthers acquaintance.

The dinner will be welcomed by all those who can possibly avail themselves of the opportunity of meeting their brother practitioners from countries which, although lying far apart, present in their environment, in their diseases, and in the daily routine of professional life, so much in common.

Tickets, 10s. each (guests are allowed), can be obtained on application to the Secretary, London School of Tropical Medicine, or to the Secretary, Seamen's Hospital, Greenwich, S.E.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

Cambridge, August, 1905.

The following candidates, having satisfied the undersigned examiners, are entitled to receive the Diploma: Percy William Bassett-Smith, Harry Andrew Foy, Wyndham Malan Grattan Guinness, John Taylor Connell Johnson, Rustamjee Manakjee Kalapesi, Daniel Mackinnon, Arthur Robartes Wellington.

George H. F. Nuttall.
Ronald Ross.
George C. Low.
} Examiners.

August 19th, 1905.

Six of the seven successful candidates had taken out a course of instruction at the London School of Tropical Medicine.

Review.

Report of the Health Officer for the Colony of Natal for the Year ended December 31st, 1904.

Ernest Hill, M.R.C.S., L.R.C.P., D.P.H., Health Officer of the Colony of Natal, has drawn up the third annual report of the Department of Public Health for the year 1904.

The census taken during 1903 showed the European population to be 101,183, exclusive of troops. The births numbered 3,156, deaths 1,102, being respectively 10·89 and 31·19 per thousand living per annum. The general death-rate among Indian immigrants exceeds that of Europeans by no less than 8 per 1,000.

Plague, during the year 1903, attacked some 208 persons, but during 1904 only 18 cases (13 deaths) were recorded; the majority of the cases occurred in Durban, where the disease appeared in the month of April.

Small-pox cases, which in 1903 numbered 286, during 1904 numbered 1,238. The effect of the outbreak has been to draw attention to vaccination. Mr. Hill states that the natives fully appreciate the benefits of vaccination against small-pox, but, owing to the apathy of the local authorities as well as of the British employers of labour and to the exigencies of war, vaccination had been largely neglected.

Enteric fever cases amongst Europeans during 1903 numbered 919, of whom 84 died; but during 1904 the numbers were reduced to 516, of whom 58 died. Reports from all parts of South Africa indicate a general reduction of enteric fever, but to what the reduction is due is not known.

Dysentery and *Diarrhœa* proved less of a scourge during 1904 than 1903; the same is to be said of *Scurvy*.

During the past year the infectious diseases notified amongst Europeans were: *Diphtheria* and *Membranous croup*, 65 cases; *Scarlatina*, 70 cases; *Erysipelas*, 41 cases; *Malaria*, 76; *Small-pox*, 99; *Plague*, 4. *Beri-beri* was met with at the port of Durban amongst the Chinese immigrants for the Transvaal, but no cases of beri-beri occurred amongst the people of Natal.

Clayton's fumigating apparatus is highly spoken of and Mr. Hill considers that a vessel leaving harbour, which bears a certificate of having been fumigated by the Clayton process should be, and probably would be, relieved from quarantine restrictions when entering other ports.

Correspondence.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

Sir,—In p. 270 of your issue of September 1st, just received, Major R. H. Elliot, of Madras, has, I regret to state, missed the real contention as to the points I particularly drew attention to in your Journal of July 1st, 1905. At the same time he has given preponderance to others, the construction of which, he has either consciously or unconsciously, credited me with the desire to appropriate priority or originality, in the discovery of.

Perhaps, if Major Elliot would read my remarks on *Cataracts and Secondary Cataracts, &c.*, with care and thought, he would see, that I directed attention to certain pages in my brochure on "the *Method of Operating for Cataract*," published in 1894, where I have dealt with those points I mentioned, more clearly and fully, and have also given praise to such pioneers of ophthalmic surgery as Von Graefe and others. I sincerely trust, if Major Elliot is desirous of understanding more clearly what I refer to, he will send for a copy of my book to Messrs. J. and A. Churchill, the publishers.

I regret that, instead of referring to the points I drew attention to, he has preferred to plead his (*A*), ignorance of my book, which had previously dealt with the real points at issue, namely; (a) the advantages of using Bowman's simple spring speculum by adjustment to the inner canthus of the eye in cataract extractions, which keeps off pressure from the eyeball (*vide* pp. 12-13 of my brochure); (b) the value of irrigating the anterior chamber of the eye, which had never been mentioned by any other operator that I am aware of (*vide* p. 23 of my brochure). (*B*). And drawn Von Graefe and Drake-Brockman most calmly into a sulphurous fray; with the attempt also of drawing them and myself into a controversy over a subject which there can be no contention about, since my contentions refer to the above points *a* and *b*, and not what Major Elliot has so skilfully conjured up for your readers. The astute campaigner is again abroad, and I am not anxious to have any baggage annexed and carried away to that province formerly known by the name of "Benighted," but is certainly more fully entitled to the term, "refinely enlightened," hereafter, from the North even to Tuticorin.

The plea of ignorance while desirous of claiming priority and originality for a discovery or method of the nature mentioned above, when even using an "old-fashioned type of speculum" (Bowman's, I presume, or a modification of the same), which Major Elliot has thought wise to disclose in a very delicate manner, is the most original way of getting over the point at issue, and I certainly do give Major Elliot the priority, if he wishes, for this method.

As regards the point (b), in the value of irrigating the anterior chamber of the eye by the method described by me in my brochure, my remarks were certainly not directed to Major Elliot, as will be seen from what I said in p. 196 of your issue of July 1st, when I spoke of "another operator of the eye." But, as Major Elliot has deemed fit to take up the same, and to say that my method with 1 in 10,000 solution of perchloride of Hg: is "opposed to the most elementary principles of physiology," I can only say that if I have erred according to his idea of the subject, certainly I have done so on the right side, as men often do in all walks and professions in life; at the same time, the extent of 90·6 per cent. of successes of my cases of cataract I have operated on (*vide* p. 35 of my brochure and compare with the statistics in p. 36), compare most favourably with the results of any ophthalmic surgeons of India, and it is thus that I have made not only the *best use* of my opportunities, but won the esteem and gratitude of the people of Bijnor and Benares (where I was civil surgeon of the Bijnor Hospitals and of the Prince of Wales's Hospital in Benares), besides receiving the thanks of the Government of the North-Western Provinces and Oudh for the praiseworthy manner in which my duties were discharged. These are more to me, than adhering to a theory of very little value in practical work, which, by a particular technique in operating skilfully, can be easily overcome. We can at times adhere to theory too much and sacrifice utility, which in my opinion is very unwise, since Listerian principles of antiseptic surgery have opened out the gates to tactical operators in the field in a manner truly remarkable, and no portion of the human body can be said to be sacred to the intrusion of the surgeon's knife; and that surgeon is the most skilful who, ere he lift his scalpel, mentally takes into consideration the *pros* and *cons* of his case.

I am prepared to prove to Major Elliot or any others with regard to the above points which I have claimed priority in introducing—provided my expenses to and from, and while in India are paid—that my patients whom I have operated on have benefited greatly by the methods named. I have no doubt that hundreds of my cases, whose names and addresses I have in my books, are still living, and could offer themselves as living testimony of those methods which I employed, and the records of which I have in my possession. If Elliot would desire to see me perform the same operation with similar methods and with the same measure of success, I will be glad to accept a challenge from him under the conditions mentioned. I feel I cannot do more to satisfy him as to the claims my work has upon his consideration, and there can be no other testimony of my having made the *most* and the *best* use of my opportunities than what I have already laid before him and the public. My brochure was published in 1894, at a time when the question of iridectomy in cataract operations was a point of controversy among some ophthalmic operators. Surely he does not blame me for publishing my views before the medical profession with the experience I had had? I consider that it would have been opposed to all medical ethics to remain silent when one could aid in a discussion and enable a consensus of opinion being formed on this point. Had Major Elliot been so interested in ophthalmic surgery in those days as I was, and still am, he might have possibly read my brochure, and even listened to a portion of the same that I laid before the Indian Medical Congress at Calcutta. I feel, however, that he might have done so, at any rate, after I had drawn attention to those pages in it, when I contributed my remarks on cataract, &c., in your journal, when he then would have certainly been the better able to judge of the righteousness of my contention, instead of consigning me and my work to an unknown region of thought.

In my brochure I have clearly pointed out, that in only 2½ per cent. cases of cataract operated upon with the greatest success was this particular form of *impairment of vision* found, which could be removed. My experience of these cases was limited to the North-Western Provinces and Oudh, for in India, which is a large country, apparently "racial influence" and "diet" have something to do with the various forms of cataract noticed. This being the case, surely Major Elliot is willing to admit that Major Maynard, whose field of operations was limited to Bengal, and who, as I was told, had done only about 100 cataract operations in the Bengal circle, could not possibly have been in as fair a position as I, to judge of this particular impairment of vision, since I was the observer, and my successes were 90·6 per cent., which would not have been the case in immature cataracts; and having done 1,000 operations for cataract of various kinds by eclectic methods, I had surely learnt to diagnose a mature from an immature one? The conclusions, which Maynard drew were, in my opinion, not only hasty, but far from what is permissible in the rules of debating or discussion; and, moreover, my reply as the introducer of the discussion was omitted from the *Transactions* of the Indian Medical Congress, when printed in the form of a volume, which I received *months after*.

Maynard's procedure and answer reminded me very much of the school-board lad who was asked by the examiner if he knew what "transparent" meant? "Yes," said the lad, "something you can see through." "Give an example?" "The key hole," was his reply. This illustrates that there is much that can be seen through which is both transparent and yet not transparent.

Yours truly,
G. H. FINK, Major,
I.M.S., M.R.C.S.(Eng.), L.S.A.(Lond.).

12, *Fairfax Road*,
Bedford Park, W.,
September 10th, 1905.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

SIR,—My attention has been called to your report of the speeches at the dinner at the Hotel Cecil on May 10th, on behalf of the funds of the London School of Tropical Medicine. Therein I am reported as having said that the first sleeping sickness commission to Uganda "was sent out under the auspices of the School." It has been pointed out to me that the word "auspices" is calculated to mislead. It may be well, therefore, to state that the commission was sent out by the Royal Society, and that it was under the *auspices* of the Foreign Office. The share of the London School of Tropical Medicine in the matter was to supply two of the three commissioners constituting the expedition, namely, Dr. George C. Low, Cragg's scholar at the time, and therefore to that extent financed by the School, and Dr. Aldo Castellani.

Yours truly,
August 29th, 1905. PATRICK MANSON.

[We are sorry that in our report of the speech mentioned by Sir Patrick Manson we should have wrongly reported his statements. We insert his letter and correction with pleasure. Those who were present at the dinner must be well aware that Sir Patrick in his speech made the statement as he now writes, and not as we reported.—J.C.]

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

The Ability of the Larvæ and Pupæ of the Stegmomyia Fasciata to withstand Desiccation.

J. D. Berry, M.D., states from experiments conducted at Laredo, Texas, in 1904, and published in the Public Health, U.S.A. Reports for June 16th, 1905, that the larvæ of stegmomyia do not burrow, but merely settle on the surface of the mud as the water is evaporated; the larvæ can stand drying for hours, but not for days and weeks. The S. fasciata does not occur in puddles, but the pupæ of this mosquito can be successfully hatched out of water, and the larvæ will live for a considerable time under these conditions. The pupæ emptied on the ground on cloudy days or late in the afternoon will probably hatch, but the mere emptying of a vessel containing stegomyia pupæ does necessarily kill the pupæ.

"Presse Médicale," April 15, 1905.

Cutaneous Ankylostomiasis. By W. Dubreuille.

Dubreuille has collected the evidence from all available sources showing that "ground itch" is caused by the larvæ of ankylostoma occurring in the soil.

Notices to Correspondents.

1.—Manuscripts sent in cannot be returned.

2.—As our contributors are for the most part resident abroad, proofs will not be submitted to those dwelling outside the United Kingdom, unless specially desired and arranged for.

3.—To ensure accuracy in printing it is specially requested that all communications should be written clearly.

4.—Authors desiring reprints of their communications to the JOURNAL OF TROPICAL MEDICINE should communicate with the Publishers.

5.—Correspondents should look for replies under the heading "Answers to Correspondents."

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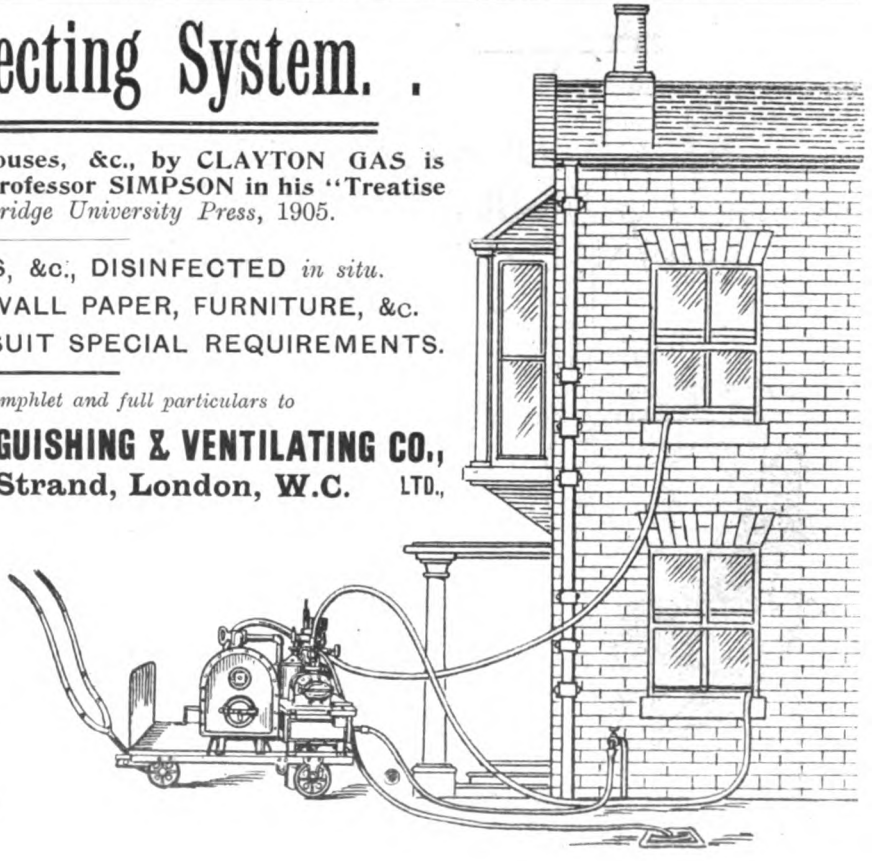
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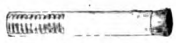
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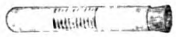
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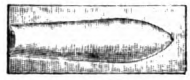
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[For London School of Tropical Medicine. see page vii.]

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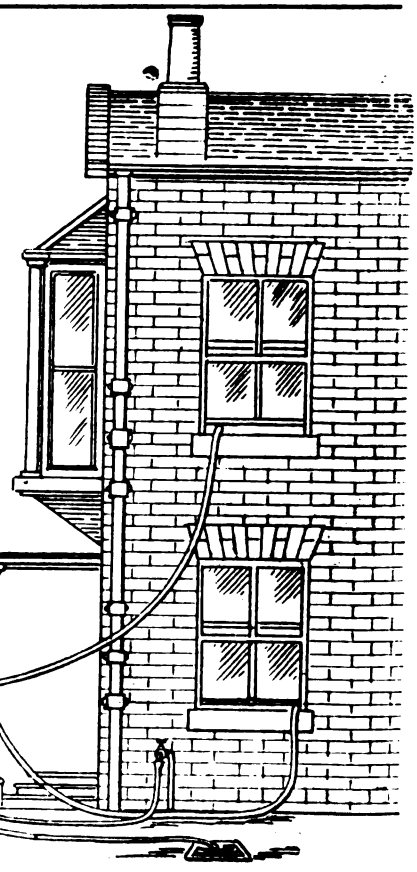
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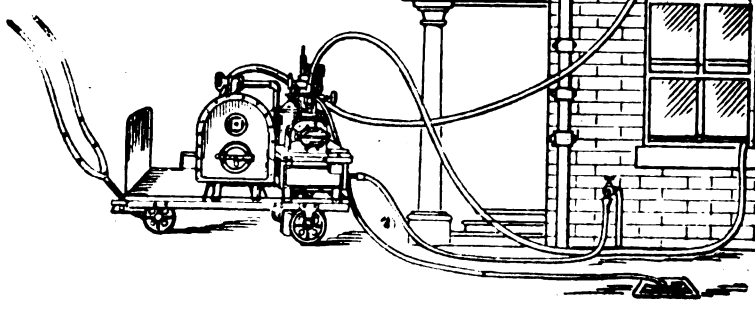


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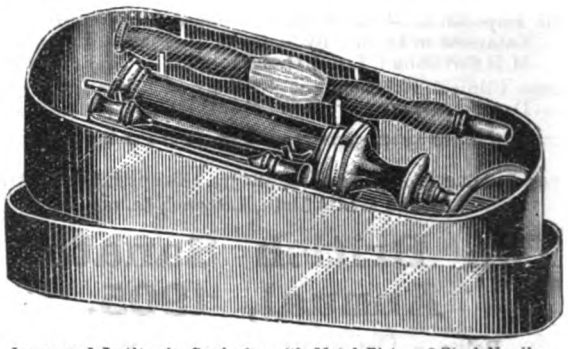
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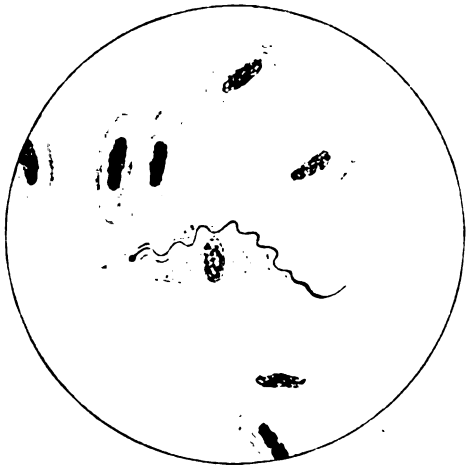
PAPERS BY FREDERICK CREIGHTON WELLMAN, M.D.

Bailundo, Angola Portuguese, West Africa.

I.

PRELIMINARY NOTE ON A TRYPANOSOME FOUND IN THE BLOOD OF AN AFRICAN DOVE (*Treron calva*).

As the writer has pointed out on other occasions, trypanosomes of both man and animals (in this high, cool tableland) have been difficult to find, although common enough in other parts of tropical Africa lying on lower levels where conditions for their spread are doubtless more favourable. I have continued, however, to examine with this parasite in mind the blood and tissues of whatever animals I could obtain, and some



Trypanosoma sp. from Blood of Treron Calva.

days ago, while examining the blood and bone marrow of three birds—the "wild dove" (*Treron calva*), the "banana eater" (*Corythaix paulina*), and the "ox bird" (*Busphaga Africana*)—as well as some specimens of a common lizard (*Aconteas meleagris*), I found a trypanosome in the heart blood of the first-named bird. And although I hope to follow up the study of this and other bird trypanosomes of this region, I publish in the meantime this note, with which I submit a drawing of the parasite, some measurements, and one or two remarks concerning special features which it presents.

MEASUREMENTS.

Length	(about)	28μ
Greatest width		9μ
Distance of centrosome from end		4μ
Length of free flagellum	(about)	8μ
Longest diameter of nucleus ...		6μ

REMARKS.

Faint longitudinal striæ or myonema lines can be made out in the protoplasm as well as very fine granules. The nucleus extends about two-thirds across the body and seems to almost completely fill the space in which it lies. The flagellum and undulating membrane are wavy in very regular curves. The free flagellum is comparatively short. I do not attempt to compare it with other similar trypanosomes, as I have not as yet had opportunity to attempt cultivation or inoculation experiments.

July 25th, 1905.

II.

AINHUM AND LEPROSY: A CRITICAL NOTE.

The writer has several times seen the suggestion that ainhum may be a manifestation of leprosy. In an article on the question in a recent number of the JOURNAL which I have unfortunately lost, the subject is entered into with a great deal of definiteness. Cases are given and the hypothesis discussed at some length. The matter is one of interest. I have accordingly called up the few cases of ainhum I know of in this district (three men) and somewhat carefully examined them with this thought in mind. All the evidence I can collect would seem to militate direct against the theory. In none of the three instances is there a single symptom or indication that suggests leprosy. Whatever may ultimately prove to be the truth as to the ætiology of ainhum, the following observations in my own particular cases would seem to fairly demand a different interpretation from that attached to similar observations made elsewhere.

(1) In none of the cases is there a leprous lesion demonstrable.

(2) In none of the cases is there present the characteristic facies familiar to those who are acquainted with negro leprosy, nor any of the other early clinical symptoms of leprosy.

(3) In none of the three cases is there a family history of leprosy. (I have seen the parents of two of the men and the father and grandfather of the third.)

(4) Only one of the cases comes from a district in which leprosy is known to exist.

(5) In none of the cases can *B. lepræ* be demonstrated in the nasal discharge by Ziel Neelsen's method, and in one case where I had amputated the offending toe no bacilli could be seen in a section of the integument from the constricted portion stained after the same method. The histological appearances, too, are different from those of leprosy, showing only the familiar fibrosis and atrophy common to all cicatricial tissue.

Of course three negative cases are not sufficient to establish any important decision of this kind, and I hope that someone with more available material will examine a series of cases and endeavour to settle the point at issue. Meanwhile, unless ainhum be a much earlier symptom of leprosy than the character of the lesion would indicate, I should be decidedly inclined to hold their suggested relation *sub judice* until further positive evidence appears.

Bihé, Angola, W. Africa.

III.

CASE OF SEVERE EPILEPSY, SHOWING EXTENSIVE BURNS DUE TO REPEATED FALLING INTO THE FIRE.

Case. No. M. 283.

Name. Sachikundi.

Age. 30 years.

Sex. Male.

Race. Bantu.

History.—Never had fits until 1899. In that year they came on, the attacks occurring more frequently in the beginning of the disease than later in its course. Has fallen into the fire a number of times during seizures. Two years ago he was put out of his village, because he was so badly burned, and lived in the bush for some time. The sores on this occasion did not all heal for a long period. Natives state that he formerly



Photo by Rev. W. T. Currie.

Photograph of Case No. M. 283, showing extensive scars on Hands, Forearm, Shoulder and Face.

possessed considerable capital in the form of slaves, ivory, &c., having been an energetic hunter and trader, noted for his strength and prowess; but since his misfortune he has been an object of charity. He has not had fits for some time, and has been allowed to return to his village.

Condition.—A tall, well-made man in fairly good condition. Claims to be entirely blind, although it is probable he can see a little light, as the retina would not necessarily be injured by the superficial cicatrization. There are a number of scars from burns, &c., on different parts of the body. The most extensive are those covering the right shoulder, forearm, hands and face. The eyes and mouth are drawn open by contraction of the scar tissue. Saliva continually dribbles from the mouth. Mind clear, and is as intelligent as the average native. He goes about alone, feeling his way with a stick.

PREVALENCE OF EPILEPSY.

Epilepsy is a common affection in this country. Nearly every small village has its one or two epileptics. Considered by the natives a contagious disease. Healthy natives will not sleep or eat with an epileptic. I have seen many cases of burns, several of them of a fatal character, caused by falling into the fire during epileptic seizures. The native custom of sitting about small fires is responsible for most of these cases. The superstitious fear with which the blacks regard epileptics, keeping them back from helping or touching one during a seizure, makes possible the large number of shocking accidents of which the case under discussion is an example. Convulsions due to ascariasis and other causes apart from epilepsy are as a rule confounded by the natives with the latter disease.

IV.

GOUNDOU IN SOUTHERN ANGOLA.

I enclose a rough sketch of the head of a Bantu boy with Goundou. I saw him while on a shooting expedition, no camera being within reach, hence this imperfect drawing.

He is an active, intelligent boy of about 16 years of age, and was sent by a native chief in response to my demand for an expert tracker to follow up some eland



Bantu Boy with Goundou.

spoor in hard, rocky ground. Says he has had the tumours from childhood. Had many headaches when a small boy, but never any discharge from the nostrils or other inconvenience arising from the presence of the growths. They do not interfere with his breathing, as he is a good runner. Sleeps with his mouth closed. Says he has never had yaws.

This is the only case of the kind I have seen in the course of a pretty large experience among the Angola Bantus.

ON THE BEHAVIOUR OF CERTAIN BODIES WHICH CLOSELY COMMINGLE WITH AND RESEMBLE LEUCOCYTES IN THE EARLIEST STAGES OF CANCER FORMATION IN THE HUMAN BODY.

By MAJOR G. H. FINK,, I.M.S., M.R.C.S.(Eng.), L.S.A.(Lond.)

Late Civil Surgeon Bijun District, and Prince of Wales's Hospital, Benam.

HAVING read a paper on "Cancer and Precancerous Changes, their Origin and Treatment," in the Pathology Section of the British Medical Association at Leicester on the 28th of July last, and also having just read the

later investigations of Professors Farmer, Moore and Walker, in pp. 314-315 of the *British Medical Journal* of August 12th, which has just come to hand, I feel it would be of interest at this time to point out the resemblance of certain bodies, already mentioned by me at Leicester, to leucocytes and their behaviour in malignant growths. I have referred to the subject in my paper above quoted as a *cyto-parasitico bacterial* invasion of the human body, and showed the part played by the cell, the parasite, and the bacteria, in the earliest and the later stages when suppuration occurs and the bacteria are found.

In referring to the term *later* in connection with Professors Farmer, Moore and Walker's investigations, I have done so because, in their earlier researches reported in pp. 1,411-1,412 of the *Lancet* of the 27th of May last, under the title of "On the Resemblance existing between the 'Plimmer's Bodies' of Malignant Growths and certain Normal Reproductive Constituents of Reproductive Cells of Animals," these gentlemen made no reference to the subject in the same manner as they have now brought forward in the pages of the *British Medical Journal* as above referred to, and it would be interesting to compare the behaviour of the bodies I have mentioned in my paper which I hope will be published *in extenso* by the *British Medical Journal*. At this juncture, I trust that I might be permitted to draw attention to the matter briefly through your columns, although the paper is claimed by the *British Medical Journal*, who have alluded to it in abstract form only in page 281 of the issue of August 5th, 1905.

At the outset of my paper, I based my analogy of cancer origin so far back as 1903 on the great discovery of Woronin and Eidam respectively, with reference to nodules in plants and tumours in animal tissues in their connection with *myxomycetes* and *myxamœbæ* which entered certain cells and became inextricably commingled and fused together in such a manner as to cause great difficulty in differentiating the one from the other in the processes involved.

I then pointed out the importance of considering Paget's, Erichsen's and Plimmer's definitions of cancer in conjunction with the statements above given, laying particular stress upon that portion of Erichsen's where he states, "Some chemical substance of an irritating character is poured out which causes an infiltration with small round cells which have the appearance of migrating white corpuscles, but in part probably arise from the multiplication of the cells of connective tissue."

The above statements, I maintain, have helped to focus the causation of cancer formation and to give the right interpretation to the processes involved in the *anaabolic* and *catabolic* stages (if I might borrow the terms), whilst the analogy of the processes involved in malarial transmission by the *accidental* and the most *constant* source, where an endocorpusclar parasite is the cause of malarial fever, has helped to also bring to light that by a somewhat similar method cancer is carried through an intercellular and intracellular parasite, which fuses itself with the embryonic cells of the mucoida gelatinous type, and which in appearance closely resembles the leucocytes and lymphoid corpuscles, and are thereby conveyed to distant parts (into cystic and benign tumours and dropsical swellings) where a certain *tyrotoxicon* chemical substance of an irritating character is also borne, and which increases side by side with the increase of the reproductive cell elements and the parasite, which go hand in hand in the process.

I do not consider it necessary to say more at present, but hope that my paper which I read at Leicester, and the photomicrographs, will soon be published in full, and thus give those who are interested in the subject of cancer formation an opportunity of adding their experience.

ANGLO-PORTUGUESE BOUNDARY COMMISSION, RUIA RIVER, JULY 7TH, 1905.

Hygiene on Shooting Trips.

[In the Journal of August 1st, 1905, we published an article on "Hygiene on Shooting Trips," by Dr. Ross. We are now favoured with additional photographs illustrative of the text.—Ed. J. T. M.]

G. A. Park Ross, M.B., D.P.H., writes:—

Last mail I sent you an article on "Hygiene on Shooting Trips," and this week I enclose a set of photographs showing my *ménage* in working order.

(1) Shows my loads carried by three boys, *e.g.*, two on the machila and one carrying food, also my three gun boys.

(2) shows my boys laying down grass for the floor of the tent.

(3) The machila cover as a carpet. Blankets in position, and box for table.

(4) The net over all and a boy holding the "trap" open.

(5) The "white chief" feeding inside, food being passed through the trap. Another boy at left-hand side is working the filter.

I took these while demonstrating the outfit to a sportsman I met. He was very taken with it.

There is very little medical work to be got here, and for the last two months the country we have been in was disturbed by a Portuguese war, with the results that all natives bolted on sight except a few who had an occasional shot at our carriers.

The Teeth of the Natives.

I was interested in some articles on the preservation of teeth in natives, specially by remarks by a Dr. Howard writing from Dar-es-salaam. He argued that the chief agent in preventing decay was constant rubbing with a piece of frayed cane or a root All the Lake boys keep their teeth in this way, and they are connected with the coast tribes, bnt among those of high veldt origin the method used is merely to rinse the mouth with water several times a day. I examined the teeth of a batch of 200 Angoni carriers to-day and also of 100 Mashonas. The former tribe is of Zulu origin and inhabits the high veldt between Lake Nyassa and Fort Jameson. Their food is entirely vegetable, consisting of rice, mealies and ufa (mealies and Kaffir corn mixed).

The Mashonas are also vegetarians and live largely on this ufa.

No man examined had worked in mines (been subjected to a meat diet), or had evidences of syphilis. I classed them as under :—

Good.—Men in whom all teeth were present and in whom there was no evidence of disease of the teeth, caries, pyorrhœa, &c.

Indifferent.—Men in whom not more than three teeth were absent, or if present affected with caries however slight, and who showed no signs of pyorrhœa.

Bad.—Men in whom neither of the above conditions obtained.

	Good.	Indifferent.	Bad.
In 200 Angoni ...	74·5%	... 16% ...	9·5%
In 100 Mashonas...	71%	... 21% ...	8%
% in Total of 300	73·3%	... 17·6% ...	9%

The ages of the carriers varied between 16 and 50. Those classed as indifferent would in every case be considered to constitute "good" teeth in a European. I leave you to make your own deductions. I have not got the number of the JOURNAL with me which contains the letters.

THE IMPORTANCE OF THE HYALOID MEMBRANE IN MATURE CATARACTS IN INDIA.

By MAJOR G. H. FINK, I.M.S., M.R.C.S.(Eng.), L.S.A.(Lond.)

IN continuation of my remarks which I contributed in p. 196 of THE JOURNAL OF TROPICAL MEDICINE for July 1st of the current year, on secondary cataracts and membranous opacities, I would desire to show the importance of the hyaloid membrane in such cases.

It is the more necessary to do so since I read a paper "On the Treatment of certain cases of Impairments of Vision after successfully operating for Cataract by lacerating the Hyaloid Membrane" before the Ophthalmological Section of the First Indian Medical Congress held at St. Xavier's College, Calcutta, in December, 1894, when an unfavourable criticism was published in p. 175 of the *Transactions* of that meeting; but my reply to Major Maynard, I.M.S., was omitted, which reply, as the opener of the discussion by the reading of that paper, showed the importance of the hyaloid membrane in the operations successfully performed for *mature* cataracts. I pointed out in that paper that in 2½ per cent. of cataract cases *successfully* operated upon, there was to be noticed a certain form of impairment of vision which could only be ascertained and treated with success immediately after extraction of the cataract had been done, by testing the patient's vision by holding up your fingers before his eyes to count. In so doing, the patient who had been successfully operated upon (and there seemed no reason why he should not see) replied, that he could not see. In such cases if you examined the eye carefully, although the pupil presented to the naked eye a perfectly black appearance, yet, on using a magnifying glass placed before the eye or direct examination with the ophthalmoscope, there was to be observed a cobweb-like structure in the *fossa patellaris*. If now the cystotome be applied gently to the centre of this cobweb like membrane, and the same lacerated, the immediate result of this second operation at one sitting, gives vision, for the patient now says, he is able to see, which he did not before. In such cases, I also have observed a slight escape of vitreous, which, in my opinion and that of several ophthalmic surgeons, is of very small consequence under antiseptics. But it is a most remarkable fact, that in these 2½ per cent. cases, there is immediate vision, and the escape of vitreous is remarkably small. Major Maynard considered that I had been operating on immature cataracts, and thus criticised my paper. It was impossible for me, with the results of my operations for cataract extraction where I had 90·6 per cent. successes, as reported in my *brochure* on the "Methods of Operating for Cataract," pp. 34 and 35, to have selected immature cases for operating, since my operations were by eclectic methods, and I would not have had such results as these in over 1,000 cataracts I had operated upon. I have had as many as 200 patients sometimes of a morning, while on my tours in the Bijnor District, in the North-West Provinces and Oudh, waiting to be operated upon; and have selected about 30 cases fit for operation, and these were *mature* and *none immature*. It would have been impossible to get any such results in cases that were immature, and this particular form of impairment of vision after a successful operation for cataract has been undertaken, is only to be found in 2½ per cent. *mature* cataracts that have been extracted *secundem artem*, and *never* in immature cases. The results would be disastrous to your patient if attempted in cases that are immature, and the escape of vitreous on laceration of the hyaloid membrane would be so excessive, that there would be every chance of the patient losing his vision, with grave danger of panophthalmitis setting in.

The point to be noted is, that when I wrote my *brochure*, and read my paper before the first Indian Medical Congress at Calcutta, the fact that the posterior capsule of the lens was a membrane quite distinct from the hyaloid membrane which encircled the vitreous, and was in close apposition to the posterior capsule of the lens, was not sufficiently well recognised by a great many ophthalmic surgeons. I had satisfied myself, after consulting some of the highest authorities in Europe, that the posterior capsule and the hyaloid membrane, were not identically one and the same, although, owing to their very *close apposition* some were inclined to consider that they were one and the same.

In certain parts of India, where *racial influence* and *diet* enter into the subject of cataract formation, there is a form of hard cataract produced, which it is necessary to diagnose correctly and to consider the points I have given, in my *brochure* pp. 18-26. The indications for performing iridectomy, and for the extraction of the lens whole in its capsule; or, by the laceration of the anterior capsule only; as well as the extent of the corneal incision in flap extraction, are most important. It stands to reason, that an inorganian cataract would require only a very small incision, with no iridectomy, and a membranous cataract where the lens has been spontaneously absorbed, scarcely an incision; but only the usual use of the iridectomy knife or Jager's triangular knife to the depth of one-eighth of an inch, through which a fine

pair of iris forceps is inserted carefully under antiseptics to the surface of the membrane, which is now easily drawn away. These later forms of cataract are easily diagnosed with a little practice, and it is very important for your patient to be able to do so, since the operation is comparatively trifling compared with a hard senile cataract which is quite mature and needs greater care and more skilful handling, both before and after, extraction of the lens, with, or without iridectomy. I have found in India, that some patients will consult the surgeon in time for an easy extraction to be made, *e.g.*, when they notice that vision, in one or both eyes, is completely lost; and this is usually to be found in the more intelligent classes who read and write, and do fine work, such as wood carving, weaving, &c. But among the less intelligent, they defer it very often too long, when the cataract is, what one would term, *hypermature*, and has, to use a term, *over-ripened;* and in this process it has become swollen and exerted backward pressure to that degree at the point of the *fossa patellaris*, that a stage has arrived that needs to be considered carefully, *i.e.*, the cataract is fully matured, and then overmatured as it were and brought about a separation of the posterior capsule from the hyaloid membrane; but the backward pressure in the latter has caused a certain degree of membranous opacity, which, though you might successfully extract such a cataract whole in its capsule with the greatest ease and skill leaving a perfectly black pupil, still, the patient on being asked to count fingers held up before the eyes, says, he cannot see. Why? Because the hyaloid membrane which is intact and holds the vitreous, has taken on a slight membranous opacity in the centre of the *fossa patellaris* through which parallel rays of light cannot pass. The majority of patients operated upon successfully for cataract, by extraction of the lens, can see immediately after the operation to be able to count fingers held up before the eyes; but, in the 2½ per cent. cases mentioned, with this particular impairment of vision, the patients are unable to do so; and by slight laceration of the hyaloid membrane, as I have found, they are able to see *immediately*. It is my opinion that many such cases have been left to their fate when it is supposed that nothing could be done, and then deep nervous mischief is either considered to be the cause of loss of vision, or, in some cases, a secondary operation is undertaken weeks or months after when flocculi of lymph appear from the surface of the hyaloid membrane where pressure has been exerted by a hypermature lens. Such delay, in my opinion, is a danger.

In the case of a myopic eye with a full and elongated eyeball, there is grave danger of deep nervous mischief setting in if the case be left to its fate, as can be easily understood; but in a hypermetropic eye, the dangers are not so great with a flat eyeball. It is fortunate, however, that, as age advances, the eyeball shrinks; while the vitreous within the hyaloid membrane is not so great in quantity, hence the operation in these cases of hypermature cataract in advanced age (60 and upwards), can be undertaken with scarcely any risk whatever if antiseptics be employed, and the operation be done with care and skill, and at one sitting. If one considers the delicate structure of the eye, and the continual exercise of that organ in the act of accommodation; and how the lens bulges out, or rather undergoes a change of convexity almost every moment of our lives, we can understand, that after the age when presbyopia sets in (45 years) and a + 1D is used, as presbyopia advances there are in India, among the less intelligent classes, a tendency to resort to *bazaar-made* lenses until sight is absolutely lost. This tendency therefore of allowing things to go on, until a hypermature cataract forms, creates through constant accommodation at the period before hypermaturity, a great deal of pressure which is applied backward and in the region of the *fossa patellaris*, which sets up this particular impairment of vision, which though not a secondary cataract in the usual acceptation of the term, still, is a form of *secondary change* through a *primary cataract*, which I feel is deserving of the appellation *hyaloid cataract* (secondary), especially as the hyaloid membrane is involved, and not the posterior capsule of the lens; the former is quite a separate structure from the latter, and as age advances, it becomes more clearly differentiated as a structure which contains the vitreous humour of the eye, and in close apposition to the lens, there being the posterior capsule as a partition between. If we now regard the pressure of the vitreous from behind, and the lens in front during accommodation and muscular effort exerted upon the eyeball, we can see what necessity there is for a fine and elastic, yet strong membrane, to enclose both vitreous humour in the one case, and lens on the other, between which, there is, as it were, a ball and socket joint and an appreciable amount of moisture, which, as age advances, decreases considerably, hence, pressure effects are witnessed.

SOME CLINICAL NOTES ON THE ETIOLOGY OF SPRUE.

BY

DAVID J. GALLOWAY, M.D., F.R.C.P.Edin.

Singapore.

IT is a trite saying that our success in the treatment of a disease is in inverse ratio to the number of remedies advocated. The same formula might in many instances be aptly applied to the etiology also, inasmuch as our knowledge of the causation of a disease is in inverse ratio to the number of factors invoked. It is notable that, as factors in the etiology of Sprue, every possible cause, seismic, atmospheric, dietetic, physiological—even pregnancy, have been pressed into the service, and it might be profitable to discuss a few of those in the light of clinical experience.

Prolonged residence in a warm, moist climate has been cited as a cause, and in natives of Java, Sumatra, the Philippines, Cochin China and the Straits Settlements, both postulates are fulfilled. But the disease is not at all common among them. In a series of 80 cases they formed but 37 per cent. of the whole. Among Europeans in these countries the residence need not of necessity be a long one. Thus, in my records, two developed the disease in ten months, one in fourteen months, and another within two years.

It is undeniable that most if not all the cases which

find their way into the hands of practitioners in Europe have a history of having been in touch with, if not actually resident in the Tropics for many years, but it is also undeniable that these are cases of the fully developed disease which may have been in progress for nearly the whole term of their residence abroad, and which ought to have been recognised and treated years before. Instances of the disease are recorded from Ceylon, India, S. China and Hong Kong, where the conditions of climate required hold good for only some months in the year. Cases also come from N. China and Japan, where the climatic conditions postulated are non-existent. It is difficult to assume that a disease which is found to be indigenous from the tenth degree S. to the thirtieth degree N. latitude, and from the 70th to the 140th degree east longitude, is due to the agency of climate alone.

Pregnancy and miscarriage have been cited as causes, but their etiological value is on a par with the fevers, malarial or other, or any other state of physical stress determining an exacerbation in an already existing disease.

Repeated catarrhs of the stomach is merely the erroneous interpretation of the symptoms in the early stages of gastric sprue.

The question of diet is an extensive one upon which much argument has been expended, but its consideration is immensely simplified by the heterogeneity of the races in which sprue occurs. So far as my records go, Europeans, Eurasians, natives of India and Ceylon, Malays, Chinese, Japanese, Arabs, Filipinos, all seem to be liable to the disease, though not in a uniform degree. In Asiatics the racial factor in the consideration of diet is secondary to the religious, the ethnical to the ethical, each faith having its own rules as to food and its preparation, and probably not any two of the preceding races have diet alike. However all-important diet may be in the aggravation of sprue, or in its treatment, it must, as an etiological factor, be excluded on racial grounds alone.

Much has been ascribed to the *rôle* played by the liver in sprue. Whatever that *rôle* may be, it is not secondary to any changes in the liver, as, beyond participating in the general shrinkage, none are found *post mortem*, and it would be strange indeed if an organ through which is passing the blood from a bowel filled with fermenting and toxic contents should continue to functionate normally. It is to be feared that the absence of colour has powerfully suggested other clinical states in which a similar condition of stool obtains, and in which the liver or its ducts play an important part. But, although devoid of colour, the sprue stool is not devoid of bile. In the whitest specimen the presence of bile acids may be demonstrated, and the very simple experiment of administering a purgative (preferably castor oil or senna, because of their small action on the chologenetic function of the liver) will bring about a series of dejections, the first of which will be white, but the later ones will be progressively more and more bile stained. If portions of this coloured stool be placed in sterile test-tubes and kept at body temperature for a few hours, the colour will be found to fade, and eventually disappear. Again, if similar portions of the same stool be placed in test tubes and an antiseptic added, no decolorisation occurs. The latter experiment may quite as easily, though more slowly, be carried out *in corpore*. An ordinary case of sprue diarrhœa is, without any preliminary treatment, subjected to a course of intestinal antisepsis by the administration of such drugs as chinosol, izal, cyllin, beta-naphthol or any reliable non-poisonous antiseptic, and in addition to the disappearance of all the untoward symptoms, the colour of the stools will gradually return commensurately with the degree of asepsis attained. It must be conceded that the absence of colour in a sprue stool is due in most part to a process of decolorisation which it undergoes in the bowel, and that as an index of the extent of interference with the functions of the liver it is fallacious. It is thus necessary to approach the question of the etiology of sprue from some other standpoint. Of all writers on this subject, Van der Burg alone mentions the matter of contagion only to negative it in a word. But it is worthy of greater consideration. As the cases in my records grew, and instance was added to instance of individuals who had been for a longer or shorter time in contact with sprue sufferers themselves taking the disease, the suggestion of a possible contagion gathered force.

(1) European female, been all her life in the tropics. Her father had long suffered from a mild type of sprue and she developed the disease at 17 years of age. She married shortly afterwards, and six years after marriage her husband develops the disease, with much rectal trouble.

(2) Father had had sprue for many years, and was a typical case. Daughter develops it soon after her marriage.

(3) Mother and daughter who have always lived together (Malays). Mother a typical example of gastric (constipation) sprue, and has had it all her life. The daughter first showed symptoms when she was 18 years of age.

(4) A very athletic young European who had never had a day's illness in his life, is cabin-mate during his first voyage to the East with an old sprue sufferer who had been home on leave. During the voyage out he performs the kindly office of painting the sore tongue of his cabin-fellow. Ten months after his arrival he develops the most virulent sprue, and, in spite of repeated voyages to Europe, dies exhausted some nine years later.

(5) European lady began to suffer two years after her husband first showed symptoms.

(6) In an Arab family we find a mother, aunt, cousin, daughter, and another female who bore no relationship, all having occasional subacute attacks developing on an underlying chronic sprue.

(7) In a Chinese family the mother had been affected since her youth. Her daughter first showed symptoms at 16 years of age. A daughter-in-law, perfectly healthy when she joined the family, developed sprue within four years.

(8) European male. Had his first symptoms in 1899, and was sent home. While at home, and apparently cured, he married, and returned to the East. He had several slight outbreaks during the succeeding years. Five years after her marriage the wife developed a most acute sprue and had to be sent home.

(9) In an Eurasian family the mother was a typical

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SELECTIONS

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Colonial Medical Reports.—No. 12.—Seychelles.

Medical Report on the Seychelles for the Year 1904.

By Dr. Robert Denman.

Chief Medical Officer.

Vital Statistics.—(1) The Registrar's return for the year 1904 gives a total population of 20,418, an increase of 446 over the preceding year.

(2) The birth-rate is stated as 34·92, is higher than for the last seven years, being 31·27.

(3) The death-rate shows a very satisfactory decrease, being only 16·12 per thousand. The average for the past seven years was 17·07.

(4) Infantile mortality has greatly diminished. The number of children who died before they reached the age of five years was only 95.

This compares very favourably with the returns for the five preceding years, which were as follows:—

1903	1902	1901	1900	1891
155	122	148	120	121

This may be accounted for by the large number of children who died in 1903, when most of the sickly ones succumbed either directly or indirectly to the epidemic of measles which attacked nearly all the little ones in the Colony.

(5) The deaths of five centenarians were recorded during the year, one person in South Mahé having reached the ripe age of 114 years.

(6) There were 49 still births and 20 twin births in the twelve months.

Meteorological Statistics.—The mean temperature, taken from observations made twice a day, is 77·66° Fahrenheit. This is the lowest temperature I have recorded as yet, and is 1·38° below the average for the years 1898 to 1903 inclusive, and considering the situation of these islands, only 4·35° south of the equator, it will probably never be beaten. A mean shade minimum of less than 70° was registered for eight out of the twelve months, the lowest being 68·2 in November, which again was one of the three coldest months of the year.

The total rainfall was 107·05 inches, and was well up to the average. More than half of the rain, however, fell in January and November, and these two months were responsible for 53·53 inches between them.

There was a marked scarcity of rain in the five months from March to July, during which period only 5·16 inches fell, and of this quantity 3·66 inches fell in four days in April. The result of this was a drought, which did incalculable damage to the plantations, for not only did vanilla vines and cocoanut trees die from want of rain at the sea level, but those plantations which might, from their higher situations on the mountain sides, have escaped with the help of the dews suffered severely from forest fires, which became very common and caused a great deal of destruction towards the end of the dry weather.

The south-east trade wind, or, as it is called here, the monsoon, broke in the middle of April and continued without interruption until the middle of November. It was stronger than usual, and probably helped to account for the low temperatures which prevailed during these months.

Diseases Prevalent during the Year.

There were no epidemics. On other diseases I have nothing special to report.

There was a certain amount of diarrhœa at the commencement of the rains and towards the end of the dry weather, but the year on the whole was a very healthy one.

(2) The causes of death as registered give no help towards determining the existence of any special disease at any given season. The declarations are most often made by ignorant people, and in most cases without any medical certificate.

(3) Cases of phthisis did better than usual this year owing to the dry weather. I must emphasise the remarks I made last year regarding this place as a health resort for consumptive persons; I do not think that it is possible to find a worse place than Mahé for these cases. In ordinary years the air is too moist, the food is too poor, and the accommodation too rough for them.

(4) On the other hand, cases of malarial fever do very well here. They may have one attack soon after landing; this they soon shake off, and do not get a relapse as long as they remain in the colony.

State of the Town of Victoria.

Scavengering has been more satisfactorily carried out this year. The contractor seems to have profited by the experience of the past few years, and now performs his duties with less inconvenience to the public. Even now the night soil service is far from perfect.

In ordinary years the supply is sufficient for the service of the town. A new "reservoir" has been built higher up on the Lablache River, and the supply to the north end of the town is somewhat improved. The year under consideration tested the capabilities of the supply very severely, and though there was great scarcity for some time towards the end of the very dry weather, the supply was never entirely arrested. The state of affairs was sufficiently grave to make the question of an increased and more reliable supply a very important one, and though the expenses connected with any new scheme may appear to be great, I am of opinion that the money so spent would be well spent, as the town will then be free from all fear of failure of water for drinking, and if the St. Louis river plan be adopted it will also be possible by the judicious arrangements of street hydrants to protect the town against a serious outbreak of fire. At present it may be said to be unprotected, as the two small hand

pumps on carts are quite insufficient to cope with even a small fire.

Reports of the Assistant Medical Officers of South Mahe and Praslin Districts.

These reports are forwarded herewith. They are interesting in that they contain the expressions of opinions formed by their writers after three years, experience in their respective districts. Both of these gentlemen agree with me in noticing the absence of any epidemic during the year, and they both remark upon the great improvement in the general health of their parts of the colony as compared with 1903.

I do not think that the death-rate of 14·08 per mille for Praslin, and 14·01 for South Mahé can be beaten by any other tropical colony.

The difference between the death rates for these two districts and that of the whole colony is partly accounted for by the fact that the Registrar bases his rate on the estimated population at the beginning of the year, whilst that of the outlying districts has been based upon that of the end of 1904, and partly by the fact that a good many of the incurable people from both districts come to town to die.

Vaccination.

Owing to the interruption of the mail service, vaccination had to be suspended for several months. It was resumed as soon as fresh lymph arrived, and the lymph, except that which had continued to be despatched monthly from London during the Marseilles strikes and which have been left lying at that port pending the resumption of the mail service and which was also worthless, was of good quality and gave very good results.

	Victoria Hospital.	Anse Royale.
Successful 1st time	234	126
,, 2nd ,,	48	19
,, 3rd ,,	16	—
Unsuccessful	18	1
	316	146

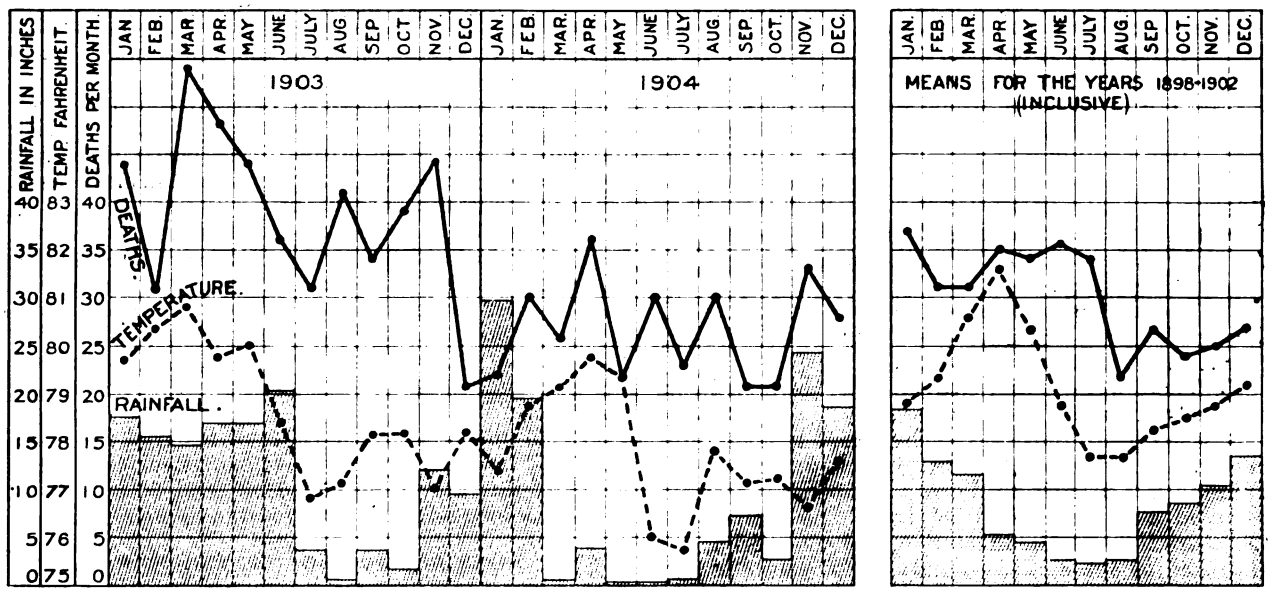
Quarantine Services.

The quarantine station at Long Island was used during the earlier part of the year. At my last inspection the disinfector worked satisfoctorily and the houses and stores were in good condition, and the guardian deserves credit for the care he bestows upon the property committed to his charge.

Hospitals and Dispensaries.

No new dispensaries have been opened during the year. The increase in the number of patients requiring free treatment is due to the increased poverty amongst the lower classes, and not to any increase in the amount of sickness.

Two hundred and ninety patients were treated at the hospital during the year, viz., 241 males and 49 females.



Twenty deaths occurred, giving a death-rate of 6·8 per cent., an improvement upon last year.

The combination amongst the whole staff has been very good, the nursing sisters as usual doing excellent work, and earning the golden opinions of the medical officers and the heartfelt gratitude of the sufferers under their care.

Estimated Population on December 31st, 1903.

	Males	Females	Total
	10,267	9,705	19,972
Births during 1904	366	332	698
	10,633	10,037	20,670
Arrivals during 1904... ...	315	103	418
	10,948	10,140	21,088
Decrease by deaths during 1904 ...	... 169	153	322
	10,779	9,987	20,766
Decrease by departures during 1904 ...	... 281	67	348
	10,498	9,920	20,418

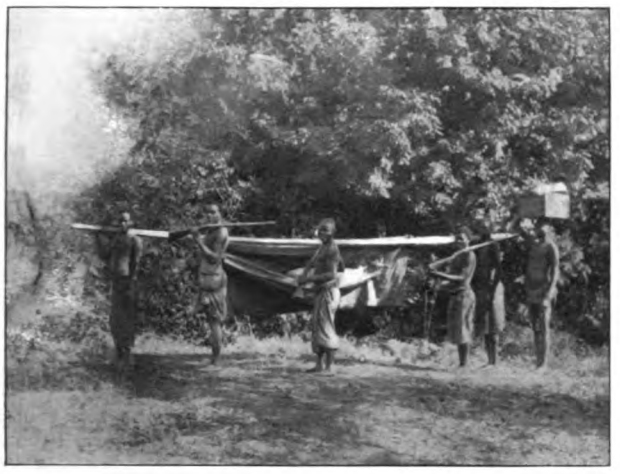


FIG. 1.



FIG. 2.



FIG. 3.

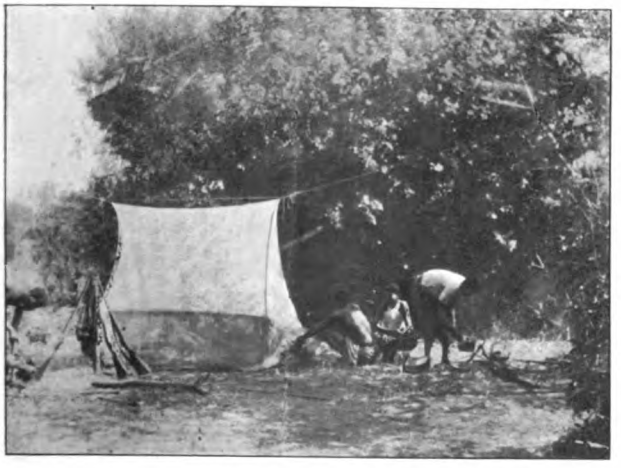


FIG. 4.



FIG. 5.

To illustrate Article by G. A. PARK ROSS, M.B., D.P.H., on "Hygiene on Shooting Trips," in Journal of August 1st, 1905.
For description of photographs see page 287, October 2nd, 1905.

ESTIMATED POPULATION—*continued.*

	Males	Females	Total
Brought forward ...	10,498	9,920	20,418
Estimated population December 31st, 1904 ...	10,267	9,705	19,972
Net increase during 1904 ...	231	215	446

Birth rate during 1904 ... ... 34·94 per mille.
Death ,, ,, ... 16·12 ,, ,,

AGES AT WHICH DEATH HAS OCCURRED.

Under 1 year		1 to 5 years		5 to 70 years		70 to 100 years		Over 100 years		Total	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
34	27	17	17	92	78	23	29	3	2	169	152
61		34		170		52		5		321	

Still births, 32 males and 17 females. Total 49.
There were 20 twin births during the year.

	Cases.	Deaths.
Accidents	57	1
General Diseases—		
Abdominal Tumour	3	... —
Abscess	8	... —
Alcoholism	1	... —
Anæmia	6	... 1
Cellulitis	2	... —
Chicken Pox	2	... —
Cyst	1	... —
Diabetes	1	... —
Epulis	2	... —
Gangrene	1	... —
General Diseases—*continued*—		
Goitre	1	... —
Gonorrhœa	27	... —
Hæmorrhoids	1	... —
Hernia	3	... —
Hip Disease	1	... —
Hydrocele	3	... —
Ichthyosis	2	... —
Imbecile	1	... —
Itch	13	... —
Lumbago...	2	... —
Lymphangitis	1	... —
Malaria	1	... —
Malingering	1	... —
Old Age	10	... 5
Pharyngitis	1	... —
Pyrexia	1	... —
Rheumatism	13	... —
Sloughing Scrotum	1	.. —
Syphilis	7	... —
Ulcers	10	... —
Worms	7	... —
Diseases of the—		
Nervous System...	10	... 4
Eye—Conjunctivitis	2	... —
Heart	9	... 1
Respiratory Organs	24	... 2
Urinary Organs—Cystitis	3	... —
Digestive System—		
Constipation	5	.. —
Diarrhœa	13	... 1
Dysentery	5	... —
Dyspepsia	3	... —
Hepatitis...	17	... 2
Intussusception	1	... 1
Liver Abscess	1	... —
Generative Organs—		
Confinements	2	... —
Ovarian Tumours	1	... —
Paraphymosis	1	... —
Salpyngitis	1	... —
Uterine Tumour	1	.. 1

Month	Barometer	Solar Max.	Min. on Grass	Shade Max.	Shade Min.	Range	Mean	Amount in Inches	Depth of Humidity	Direction of Wind	Average Force	Deaths per Month	Remarks
January	30·04	—	72·9	83·9	70·2	13·7	77·4	29·52	2·35	N.W.	4·7	22	—
February ..	30·04	—	72·8	85·2	71·0	14·2	78·76	14·48	5·23	N.W.	5·1	30	*
March	30·07	—	69·9	85·6	68·8	16·8	79·05	0·56	6·62	N.	3·3	26	—
April	30·05	161·5	73·0	87·2	72·3	14·9	79·79	3·97	6·50	N.W.* / S.E.†	3·4	36	—
May	30·06	156·6	70·8	85·8	69·6	16·2	79·42	0·19	8·30	S.E.	7·3	22	—
June	30·14	144	69·8	81·6	68·9	12·7	76·10	0·12	5·2	S.E.	12·2	30	—
July	30·09	147·2	71·9	81·3	69·6	11·7	75·77	0·32	5·6	S.E.	14·6	23	—
August	30·11	148	72·6	82·8	70·2	12·6	77·27	4·95	5·9	S.E.	13·4	30	—
September ..	30·13	154·4	70·3	84·7	69·4	14·3	77·04	7·15	4·1	S.E.	11·5	21	—
October	30·07	160·2	70·2	84·2	69·7	14·5	77·2	2·82	6·9	S.E.* / S.E. & calm †	8·6	21	—
November ..	30·09	158·2	68·9	84·3	68·2	16·1	76·65	24·03	4·1	Var. & calm	4·7	23	—
December ..	30·06	156·2	71·8	85·0	69·9	15·1	77·50	18·94	4·8	N.W.	5·9	28	—
								107·05				312	

* To 15th April.
To 11th November.

† After 15th April.
After 11th November.

RETURN OF OUT-PATIENTS TREATED AT THE DISPENSARIES.

Month	Victoria Hospital		Anse Royale		Anse Boileau		Praslin		Total
	M.	F.	M.	F.	M.	F.	M.	F.	M. & F.
January	25	119	18	15	15	4	17	12	225
February	45	185	22	9	5	7	24	12	309
March	39	202	29	11	8	2	28	14	333
April	39	129	24	13	5	6	15	14	245
May	26	172	31	7	—	4	12	13	265
June	42	144	25	12	—	3	13	12	251
July	56	163	18	7	2	3	18	14	281
August	32	126	23	5	2	7	16	20	231
September	52	148	22	7	3	6	22	14	274
October	55	173	22	5	8	6	17	16	302
November	29	145	27	6	3	4	33	19	266
December	50	181	29	13	5	8	16	17	319

RESULT OF CASES TREATED AT THE VICTORIA HOSPITAL.

Sexes	Remaining in Hospital at the end of 1903	Admitted during 1904	Total treated	Cured	Relieved	Unrelieved	Died	Remaining at the end of 1904	Total
Males	10	231	241	178	30	11	16	6	241
Females	2	47	49	32	8	2	4	3	49
Total	12	278	290	210	38	13	20	9	290

MEDICAL REPORT ON SOUTH MAHE FOR THE YEAR 1904.

By Dr. J. T. BRADLEY, ASSISTANT MEDICAL OFFICER.

I have the honour to forward the third Annual Report on South Mahé, first and second divisions.

The year 1904 saw no serious outbreak of any disease like the epidemic of measles in 1903. Measles died out in this district on November 26th, 1903; after that date no further case of measles occurred in the district.

I intend in this report to draw attention to the great number of people who are affected with hernia. From a study of the cases that came under my notice I am of opinion that heredity plays an important *rôle* in this disease. Hernia in Seychelles follows certain lines, and the principal causes in the causation of hernia are as follows:—First, hereditary influence; if the parents have hernia, very often the children develop hernia within the first year of life, at times within a few days after birth. Further, I am of opinion that when hernia is on the male side it seems to be transmitted oftener than from the female side. Second influence is, no doubt, the tropical climate, as it produces a certain weakening of the abdominal tissues; this, combined with the continued climbing of the hilly and mountainous districts, can be looked on as the second important factor.

The other influences are the same as in Europe, viz., strain, unusual exertion, and in the case of women, constipation. Children with hernia are allowed to go about without any special precautions being taken by the parents; the ordinary congenital forms are in males inguinal, in females umbilical. As they grow to adult life these hernias get larger, and are the cause of much suffering and annoyance in after life. A lot of this could be avoided if the parents would only take simple precautions; in the case of an umbilical hernia, by a binder fitting the loins and a small piece of metal covering the hernial opening. In the case of inguinal hernias I always advise the patients to get a small truss at the Victoria Hospital, where they are sold at a reasonable price. Very often, in the case of children, if proper fitting trusses are worn the hernial opening closes up.

The year 1904 had in South Mahé a good many cases of dysentery. This may be due to the great dryness in the early part of the year, followed by the heavy rains at the close of the year.

Pneumonia is, in my opinion, always the most dangerous disease in the Seychelles; during the year 1904 the deaths were four, but the year was singularly free from the disease. I am of opinion that the bulk of deaths uncertified, where the cause is given as fever, are almost always due to pneumonia.

(To be continued in next Journal.)

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example of gastric sprue. Her two daughters frequently had sore mouths, but did not suffer severely until after their respective marriages. They are now well-marked cases of sub-acute sprue.

In the minds of those who have much to do with the disease, there exists little doubt that in sprue we have to deal with a specific micro-organism which has up till now eluded isolation.

As in all diseases of a like origin, aided perhaps by a cursory glance at the instances cited above, the question of heredity might be raised. But a closer scrutiny will clearly demonstrate the fact that the incidence of the disease in parent and child is purely a matter of accident, and that it really resolves itself into the only condition which is common to all the cases quoted, a prolonged and intimate contiguity.

"Interstate Medical Journal," June, 1905.

J. A. Matlack.

ACTINOMYCOSIS.

MRS. A., aged thirty-two, a farmer's wife, presented herself for treatment four months ago for multiple abscesses of the chest wall. These abscesses had existed for about three months, gradually growing larger, and discharging a thin whitish pus. Her general health had not suffered greatly, but she had a persistent cough, with profuse expectoration, which had existed for a month previous to the appearance of the abscesses. She also complained of a constant dull pain in the right side.

Examination of the chest showed five or six red, angry-looking swellings from one to two inches in diameter, extending in a line at the level of the seventh and eighth ribs posteriorly on the right side, discharging thin pus through numerous small openings resembling somewhat the breaking down of a carbuncle, the little apertures being fringed about with outgrowths of peculiar bluish, soft granulation tissue. The pus contained numerous greyish granules about the size of a pinhead. Physical examination of the chest showed signs of pleuritic effusion, extending as high as the fifth rib posteriorly on the right side, with coarse râles over the middle portion of the lung.

The sputum was light-coloured and watery, and was filled with granules similar in appearance to those found in the pus. Microscopic examination of these granules from both pus and sputum showed them to be colonies of ray fungi.

The fact that the pulmonary symptoms appeared a month prior to the development of the abscesses makes out a clear case of actinomycosis primarily affecting the lung, thence extending to the pleura and finally penetrating the chest wall.

No clue as to the source of infection could be obtained from the patient's history. The patient was placed on small doses of potassium iodide, rapidly increasing the dosage from day to day. She showed at once a remarkable tolerance to the drug, and also began to show improvement after a very few days of treatment. The cough disappeared, the abscesses healed with the exception of one small opening, and the patient's general condition is quite good. The only physical abnormality to be noted is an area of relative dulness over the site of the former pleuritic effusion. T. P. B.

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THE

Journal of Tropical Medicine

OCTOBER 2, 1905.

THE INCORPORATION OF "*CLIMATE*" WITH THE *JOURNAL OF TROPICAL MEDICINE*.

By the subjoined letters it will be seen that the Quarterly Journal *Climate*, devoted to health and travel in warm countries, which has been ably edited and conducted by Dr. Charles F. Harford, of Livingstone College, ever since he founded the Journal some six years, is to be discontinued. The reason for the discontinuance is the fact that Dr. Harford has recently taken up other responsible public duties which altogether absorb his spare moments. Many will regret the disappearance of *Climate*, which has been conducted in a manner that has interested and served to guide and help numbers of tropical residents to a better knowledge of how to lead healthy lives in warm countries.

It would be a great loss were no provision

made to continue to convey the instruction and information *Climate* afforded, and it is to meet this contingency that the Editors of the JOURNAL OF TROPICAL MEDICINE have advised the Publishers to devote certain numbers of the Journal to general hygiene in the tropics.

LETTER FROM DR. HARFORD, EDITOR OF *CLIMATE*.

Livingstone College,
Leyton, E.
September 25th, 1905.

TO THE EDITORS OF "THE JOURNAL OF TROPICAL MEDICINE."

GENTLEMEN,—I desire to inform you that *Climate*, the Quarterly Journal of Health and Travel, which I have had the honour to edit for the past six years, is to be discontinued at the close of this year. This journal, as you are aware, has had for its object the diffusion of information concerning questions of climate and hygiene, including such subjects as food supply, clothing, sanitation and house building, and it has dealt very fully with the problems of protection from mosquitoes, and the prevention of malaria and other tropical diseases. It has also provided information concerning the causation, symptoms and treatment of the most important diseases of warm climates.

Climate was intended primarily to provide information on these subjects for residents or travellers in tropical climates who are obliged to study these problems, and yet who have not the technical knowledge which would enable them to appreciate ordinary scientific articles in the medical press. At the same time a large number of our readers are members of the medical profession and the subjects dealt with are of equal interest to strictly professional readers, and to those who are placed as already mentioned.

The only reason for the discontinuance of *Climate* is the fact that I am personally too much occupied to devote the time necessary for its publication, and I am exceedingly anxious that the readers of *Climate* should have some opportunity of obtaining in the future the information which we have provided for them in the past in our columns. Many of our readers are in most influential positions, and when it is realised how much the carrying out of measures of sanitary reform depends upon the co-operation of the administrators and public officials in our colonies, and the European residents generally, it is clearly a matter of the first importance that they should have access to some reliable publication which will give them the facts which they ought to know.

I hope, therefore, that it may be possible to make some arrangement by which THE JOURNAL OF TROPICAL MEDICINE may issue some numbers every year which could be supplied to our old subscribers if they were willing to transfer their subscription, and which would specially deal with the subjects above enumerated. I cannot help thinking that discussions in certain specified numbers on hygienic and climatic subjects would be of interest to your own readers, and would certainly be of benefit to ours.

If you are willing to do this we are willing to transfer to you all the interest of *Climate*, and we will do our best to induce our readers and others to subscribe at least for these special numbers.

I am making this offer with the cordial approval of the Committee of Livingstone College, under whose auspices *Climate* has been published, and also with the hearty concurrence of my colleague, Dr. Basil Price, who has co-operated with me recently in the issue of this journal.

I am, yours faithfully,
CHARLES F. HARFORD,
Editor of *Climate*.

TO THE EDITOR OF "CLIMATE."

September 26th, 1905.

DEAR DR. HARFORD,—We beg to acknowledge your letter in reference to the discontinuance of *Climate* at the end of the year. We have been so accustomed to look forward to the interesting numbers of *Climate* for the past six years that we regret to think that a journal devoted to work in a corresponding field to our own is to be discontinued. *Climate*, to our positive knowledge, has proved welcome to readers in many parts of the world, and we are sure the announcement that *Climate* is to be discontiuued will be received with sincere regret. Anything we can do, to in any way fulfil and carry on the scheme of work which *Climate* has made peculiarly its own, we are willing and anxious to do. Our suggestion is that we announce that *Climate* is incorporated after January 1st, 1906, with THE JOURNAL OF TROPICAL MEDICINE; that we issue yearly four numbers of the JOURNAL specially devoted to the field hitherto covered by *Climate*; that these "general hygiene" numbers be issued on January 15th, April 15th, July 15th, and October 15th; that these four numbers be obtainable by non-subscribers to THE JOURNAL OF TROPICAL MEDICINE by the payment of a proportionate and separate subscription. We hope this scheme will be acceptable to you and your readers.

We are, yours faithfully,
JAMES CANTLIE,
W. J. SIMPSON,
Editors JOURNAL OF TROPICAL MEDICINE.

Reviews.

VERIFYING DEATH.

LE DANGER DE LA MORT APPARENTE SUR LES CHAMPS DE RATAILLE. (The danger of apparent death on the battle-field). By Dr. ICARD, of Marseilles. 1905.

Dr. Icard, whose name is a household word in France by reason of his many writings on medical jurisprudence, especially those on the subject of the verification of death and of the dangers of premature burial, has written this small book with a view chiefly of preventing this occurrence taking place on

the battle-field, and his procedure supplies us with an absolute guarantee against a wounded soldier being buried alive; his method also is at the same time harmless, easy of application, quick in action, and practically infallible in results. In fact, so simple and certain is this method of verifying actual death, that it can also be readily applied in hot countries where burials are apt to be carried out in haste—especially during epidemics—without waiting for putrefaction to set in.

Dr. Icard's method consists in a subcutaneous injection of *fluoresceine*, a substance which he has proved to be absolutely harmless and one capable of being kept indefinitely if in an alkaline solution. The injected body (*if still alive*) takes on an appearance of intense jaundice, owing to the skin and mucous membranes acquiring a deep yellow discoloration, whilst the eyes are changed to a brilliant emerald green.

The formula is:—

Fluoresceine	10 grammes.
Carbonate of Soda	15 grammes.
Distilled Water	50 cubic centimetres.

Eight to ten cubic centimetres of this sodic solution are deeply injected into the muscles or cellular tissue, and for preference into the epigastric hollow. The slowness of the circulation is compensated for by the marvellous colouring power of the injected fluoresceine, which is readily perceptible in a solution of a strength of even 1 in 45,000,000 (one in forty-five millions). The drug is gradually eliminated by the skin and kidneys, the execretions of which acquire a greenish tinge.

The book is an interesting one to read and can be obtained of A. Maloine, 25, Rue de l'Ecole de Médecine, Paris. Price 2s. Postage extra.

J. E. N.

THE PREVENTION OF CHOLERA, AND ITS TREATMENT. By Lt.-Colonel J. DUKE, I.M.S. (retd.) Third Edition, enlarged. Thacker, Spink and Co., Calcutta. 1905. Pp. 28. Price 8 annas.

The appearance of a new edition of Lt.-Colonel Duke's well-known pamphlet on cholera is opportune. The disease threatens Europe, and in many parts of the near East as well as in India cholera has recently declared itself. Colonel Duke in his account of the Prevention of Cholera states that the cholera microbe outside the human body, so far as is known, only lives and reproduces in water.

Taking this fact as his text, he shows how to deal with drinking water so as to render it safe, and points out that everything that is *wet* should be suspected as a possible carrier of the disease. The microbe is destroyed by boiling, by drying, and by exposure to acid solutions. The periodical disinfection of wells by permanganate of potassium is carefully and simply told, and the disinfection of drinking vessels, milk, curds, mussucks (water skins), buckets, houses, mud floors and clothing is discussed and described in a manner understandable by all.

Under the title of "Addenda," the treatment of a case of cholera is given in detail. As the microbe of the disease thrives in alkaline medicines and is killed by acids, mixtures of an acid nature are to be given and calomel and Indian hemp are in some cases particularly beneficial. A favourite prescription is calomel grs. ii, ext. Indian hemp gr. ½, and ext. gentian (or taraxaci) grs. ii, or hydrargyri iodidi rubri gr. ⅛, ext. Indian hemp gr. ½. Colonel Duke cites an outbreak of cholera in which, of cases treated by calomel and Indian hemp, 70 per cent. recovered, whilst the deaths amongst those who had not this treatment 73 per cent. died. Colonel Duke's book ought to be in the hands of every one when cholera threatens, and the instruction and advice it gives followed implicitly.

THE PRACTICAL STUDY OF MALARIA AND OTHER BLOOD PARASITES. By J. W. W. STEPHENS, M.D.Cantab., D.P.H.; WALTER MYERS, Lecturer in Tropical Medicine, University of Liverpool; and S. R. CHRISTOPHER, M.B.Vict., I.M.S. University Press of Liverpool. 396 pp. and xliv. pp. Second Edition. Net price 12s. 6d.

The new edition of this admirable text-book contains several important additions. Of these we note especially descriptions of many new Anophelines, mosquito genera, hæmogregarines, trypanosomata, &c., and an account of Schaudinn's investigations on halteridium.

The chapter on the Leishman-Donovan bodies will be welcomed by students of tropical medicine, for they will find a succinct account of the signs and symptoms these bodies give rise to, and a coloured plate illustrative of the anatomical features of the parasite.

Chapter XXIX. deals with spirillar fever and the spirochætes found in the blood of persons suffering from spirillar fever.

In the appendix valuable information will be found concerning blood-sucking flies, and directions for the preparation and use of stains and of numerical data.

The second edition of this book maintains the eulogium passed upon the first edition, and its value is enhanced by the addition of four new coloured plates, and by the fact that it brings our knowledge of the subjects it deals with up to date.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"El Siglo Medico," of Madrid, August 19, 1905.

TREATMENT OF LEPROSY BY MANGROVE.

"El Mangle (*Rhizophora mangle*, Linn.) en el tratamiento de la lepra." On the Treatment of Leprosy by Mangrove. By Dr. Sixto Padilla, of Ahuachapán, San Salvador, Central America.

Dr. Padilla commences his important work by recording the special studies of Dr. Aguirre-Velasquez

and Dr. Mauricio on this subject, and also the communication of Dr. Duque and Dr. Moreno to the Pan-American Medical Congress from which the following interesting passages are taken.

"The effects of mangrove on leprosy are as follows. At first, if administered in large doses to commence with, it produces nausea, lassitude, vomiting, and purging, which, however, disappear with the suspension of the treatment. For this reason it is always advisable to commence with small doses, in order to gradually accustom the patient to the drug.

"The first thing the patient experiences after fifteen to twenty days' treatment is an unaccountable feeling of cheerfulness apparently without cause for the same, and without doubt he has a better appetite, and the lepralgic pains are not so severe, he feels active and disposed to carry on his usual occupation. The following month the patient is another man; he has put on flesh, eats well, digests well, sleeps well, and works without feeling weary; the spots have become somewhat rose-coloured, more so in the periphery than in the centre, and those which are confluent tend to separate, leaving large intervals of healthy skin between each other; if there are any ulcerations suppuration is diminished in them, they lose their dark colour and take on a bright red hue, and the inflammatory areola disappears, the lepromata undergo a transformation, the fresh nodules are not so extensive, and the fever usually present on these occasions almost entirely disappears. Following up the treatment, the improvement becomes more marked, the periodic crops of lepromata disappear definitely from the fifth to the seventh month of treatment, and the lepro-tuberculomata disappear in two ways, either by becoming inflamed, painful and suppurating, or else they undergo fatty degeneration and become absorbed, leaving behind them in each case a white scar with a faint rose-coloured tint. Sometimes they become encysted and calcified, necessitating their removal by incision; the ulcers about the eighth month of treatment have healed up. The anæsthesia has completely disappeared. At the ninth month, according to Drs. Duque and Moreno, the alopecia ceases, and the eyelashes and eyebrows grow again. What is most noticeable in these patients is the return of the face to its normal condition, for it would at first seem impossible that faces with a skin like parchment, which give this characteristic and repulsive aspect, could return in a relatively short time to their normal condition with a fine skin. In a year, according to these same Cuban physicians, the patient is generally cured."

Dr. Padilla now gives an account of three cases which came under his own personal observation. The first of these patients was under treatment for ten months, the second one for seven months, and the third for barely six months, and he states that the first and third cases gave the best possible results; but in the case of the second patient it was noticed that scarcely any hairy down reappeared on his body, nor did his eyelashes and eyebrows make much progress as regards growth. The first case occurred in a man aged 32 years, a widower, and a field labourer, with no family history whatever of the infirmity from which he suffered, which he believed he contracted from a female servant who lived in his house. His two sons, one aged 11 years and the other 9 years, are both healthy.

He stated that the first manifestations that he noticed occurred about six years ago, commencing in the left cheek, and about two months later in the right cheek, and that these were like thick ridges which increased until they covered the whole of his face, and were accompanied with painful pustules which afterwards disappeared. A year afterwards he had more spots, which spread to the nose and ears, taking on a blackish tint with scales which had disfigured his nose, and some ulcerated nodules on his ears, and also scattered over many parts of his body including his nails, and certain affected parts were also attacked by local inflammation. Dr. Padilla diagnosed the case as one of tubercular leprosy in its third stage, and he commenced treatment by 30 grammes of mangrove boiled in 120 of water, to be taken daily; this was done for twelve days. For another similar period the dose was increased to 45 grammes daily, and then for another ten days to 60 grammes a day. After this the fluid extract was used, commencing with 20 grammes daily, the dose being gradually increased up to 45 grammes in a month's time; a great improvement was now observed, including the reappearance of the downy hair, the swelling of the feet disappeared, the patient enjoyed a good appetite and slept well, was very cheerful, and was now able to attend to his usual occupations. The fluid extract was now changed for the dry in doses of 2 grammes daily, which were gradually increased up to 7 grammes in the next two-and-a-half months. Eleven months after the commencement of the treatment the patient was the first to ask for its suspension, since he felt and appeared to be thoroughly restored to health.

J. E. NICHOLSON.

"*Journal of the Royal Army Medical Corps*," *June*, 1905.

1. The Direct Transmission of Enteric Fever. By Lieutenant-Colonel A. M. Davies, R.A.M.C.

2. Researches on Malaria. By Major Ronald Ross, C.B., F.R.S., D.Sc., I.M. S. (Retired).

3. Report on the Prevalence of Enteric Fever in Bermuda, with Tables and Diagrams. By Major J. W. Cockerill, R.A.M.C.

4. The Spread of Enteric by Latrine Infection. By Colonel R. H. Quill, R.A.M.C.

(1) The general opinion up to 1870 was that typhoid infection from patient to patient, or from patient to nurse, was extremely rare. Since that date, however, evidence of direct transmission of disease has increased. This may be accounted for either by faulty diagnosis or observation, or it may be that a change has taken place in the nature of the disease, or in the bodily constitutions of the persons exposed to infection, so that the present generation is more receptive of infection than was formerly the case. The establishment of the belief that typhoid is directly infectious implies the necessity for the adoption of Koch's stamping-out method by early detection of the disease, notification, isolation and disinfection.

(2) Ross describes his work in India in connection with the mosquito-malaria theory of Manson, the

present communication (in the June, 1905, number of the *Journal of the Royal Army Medical Corps*) being the concluding statement. It is well to have an account of this all-important discovery clearly stated, for few facts in the history of medicine have had more far-reaching effects.

(3) Cockerill states that the cases usually diagnosed simple continued fever in Bermuda are in the large majority of cases mild enteric fever. During the period from 1884 to 1893 typhoid appeared chiefly in autumn, and was attributable to contaminated drinking water; since 1893 the disease occurred mostly in summer, being chiefly due to flies and contaminated dust. In Bermuda typhoid fever occurred amongst men of an older age than is usually disclosed.

"New York Medical Journal."

INTERMITTENT ANGIOSPASM ON THE BASIS OF CHRONIC MALARIA. By F. Schwyzer, M.D.

By angiospasm is meant the disturbance of the vaso-motor nerves caused by chronic malaria. Schwyzer describes a series of cases.

Case 1.—Man with malarial history had a sudden feeling of numbness (loss of sensation) in the right arm, followed by a similar affection of the right leg, tongue and gradual aphasia. The symptoms wholly disappeared within two hours. Two days later a slight recurrence of symptoms, and again, two days afterwards a slight aphasia recurred. Malarial parasites were present in the blood. Quinine lessened severity of attacks, but feelings of formication, &c., remained for some weeks. The left arm was involved during the course of the disease.

Case 2.—During the autumn of each year the patient for many years had some numbness and formication in the extremities.

Case 3.—Suddenly lost power of speech.

Case 4.—Numbness in limbs and aphasia.

Case 5.—Numbness in arms accompanied by nausea and vomiting recurring every second day at the same hour.

Case 6.—Numbness in limbs and aphasia.

Case 7.—Numbness in limbs, head and tongue.

Case 8.—Numbness in right arm and leg, vertigo and some aphasia.

In all these cases a history of malaria was obtained, and in the majority malaria parasites were actually found in the blood. In none of the cases, excepting the aphasia, was there any motor disturbance. Quinine afforded relief in every instance and in most cases cured.

"The Practitioner," August, 1905.

PATHOLOGICAL VARIATIONS OF PHYSIOLOGICAL VASO-MOTOR ACTION, WITH SPECIAL REFERENCE TO THE MALARIAL PAROXYSMAL NEUROSES. By Francis Hare, M.D.

Hare remarks that the most conspicuous manifestation of malaria is the rigor. In rigor there is intense vaso-constriction of the cutaneous area and the radial artery is tightened up. The corresponding dilated area is in all probability the muscular layer of the body. In this belief Hare affirms that there is a malarial migraine; that asthma and angina pectoris may depend upon malaria; that there is a well-marked malarial epilepsy and many forms of neuralgia, trigeminal and others, can be explained by priority of vaso-motor action. In these affections there is apt to be vaso-constriction more or less widely generalised, associated with a vaso-dilatation more or less localised at the seat of pain. Gastralgia, Raynaud's disease, recurrent temporary amblyopia, erythromelalgia and urticaria, all of which are essentially of vaso-motor mechanism, may depend on malaria.

Books and Papers Received.

FIRST ANNUAL REPORT OF THE HENRY PHIPPS INSTITUTE FOR THE STUDY, TREATMENT AND PREVENTION OF TUBERCULOSIS. Philadelphia: 238, Pine Street. 1905. Pp. 265.

GLANDERS: ITS DIAGNOSIS AND PREVENTION TOGETHER WITH A REPORT ON TWO CASES OF HUMAN GLANDERS OCCURRING IN MANILA, AND SOME NOTES ON THE BACTERIOLOGY AND POLYMORPHISM OF BACTERIUM MALLEI. By W. B. Wherry, M.D. Bureau of Public Printing, Manila. 1904. Pp. 25. Illustrated.

A CATALOGUE OF ASEPTIC FURNITURE, STERILISERS, &C., SUITABLE FOR THE OPERATION THEATRE AND WARDS OF HOSPITALS, ALSO FOR THE CONSULTING ROOM. Down Brothers, Limited, 21, St. Thomas's Street, London, S.E. 1905.

Miscellaneous.

SCURVY.

AN OLD-TIME DESCRIPTION OF THE DISEASE.

Anson's "Voyage Round the World," book i., ch. x., 1740-1744.

"Soon after our passing Straits le Maire the scurvy began to make its appearance amongst us. . . . . The mortality went on increasing, and the disease extended itself so prodigiously that after the loss of above two hundred men we could not at last muster more than six fore-mast men in a watch capable of duty.

"This disease, so frequently attending all long voyages, and so particularly destructive to us, is surely the most singular and unaccountable of any that affects the human body. For its symptoms are inconstant and innumerable, and its progress and effects extremely irregular: for scarcely any two persons have the same complaints, and where there hath been some conformity in the symptoms the order of their appearance has been totally different. However,

though it frequently puts on the form of many other diseases, and is therefore not to be described by any exclusive and infallible criticisms, yet there are some symptoms which are more general than the rest; and therefore, occurring the oftenest, deserve a more particular enumeration. These common appearances are large, discoloured spots dispersed over the whole surface of the body, swelled legs, putrid gums, and, above all, an extraordinary lassitude of the whole body, especially after any exercise, however inconsiderable; and this lassitude at last degenerates into a proneness to swoon on the least exertion of strength, or even on the least motion.

"The disease is likewise usually attended with a strange dejection of the spirits, and with shiverings, tremblings, and a disposition to be seized with the most dreadful terrors on the slightest accident. Indeed, it was most remarkable, in all our reiterated experience of this malady, that whatever discouraged our people or at any time damped their hopes never failed to add new vigour to their distemper; for it usually killed those who were in the last stage of it, and confined those to their hammocks who were before capable of some kind of duty; so that it seemed as if alacrity of mind and sanguine thoughts were no contemptible preservations from its fatal malignity.

"But it is not easy to complete the long roll of the various concomitants of this disease; for it often produced putrid fevers, pleurisies, the jaundice, and violent rheumatic pains, and sometimes it occasioned an obstinate costiveness, which was generally attended by a difficulty of breathing; and this was esteemed the most deadly of all the scorbutic symptoms. At other times, the whole body, but more especially the legs, were subject to ulcers of the worst kind, attended with rotten bones, and such a luxuriancy of fungous flesh, as yielded no remedy. But a most extraordinary circumstance, and what would be scarcely credible upon any single evidence, is that the scars of wounds which had been for many years healed were forced open again by this virulent distemper; of this there was a remarkable instance in one of the invalids on board the *Centurion*, who had been wounded about fifty years before at the battle of the Boyne; for though he was cured soon after, and had continued well for a great number of years past, yet, on his being attacked by the scurvy, his wounds, in the progress of his disease, broke out afresh, and appeared as if they had never been healed: nay, what is still more astonishing, the callus of a broken bone, which had been completely formed for a long time, was found to be hereby dissolved, and the fracture seemed as if it had never been consolidated. Indeed, the effects of this disease were, in almost every instance, wonderful; for many of our people, though confined to their hammocks, appeared to have no inconsiderable share of health, for they ate and drank heartily, were cheerful, and talked with much seeming vigour, and with a loud, strong tone of voice; and yet, on their being the least moved, though it was only from one part of the ship to the other, and that in their hammocks, they have immediately expired; and others, who have confided in their seeming strength, and have resolved to get out of their hammocks, have died before they could well reach the deck; and it was no uncommon thing for those who were able to walk the deck and to do some kind of duty to drop down dead in an instant, on any endeavour to act with their utmost vigour; many of our people having perished in this manner during the course of this voyage."

This exceedingly dramatic, but apparently unexaggerated account of scurvy in all its terrors, was probably written by Benjamin Robins, a celebrated engineer officer, though the author's name on the title-page is "Richard Walter, M.A." By whomsoever it was written—and no medical man could have given a better description—it is excellent, and reminds one much of Defoe's account of the plague in London.

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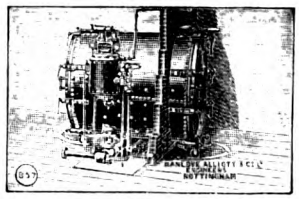
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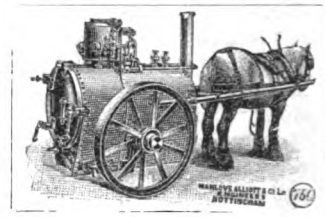
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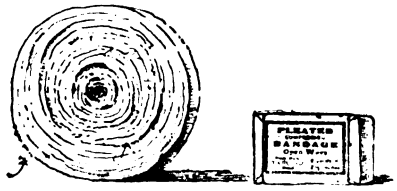
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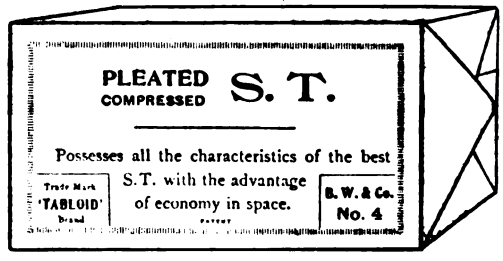
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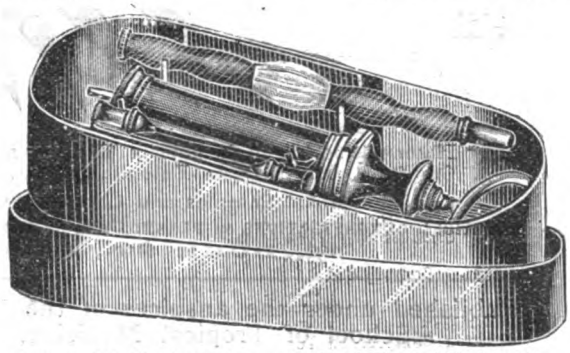
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for the Session Commencing October, 1905.

IT is a pleasure and an honour for me to address you at the opening meeting of your nineteenth session, and I thank you for giving me the opportunity. Coming from Cambridge, where the importance of tropical medicine has been fully recognised by the institution of a University diploma in tropical medicine and hygiene, I feel that this is an occasion which can but strengthen the bonds that unite us in the desire to further our common object. I have chosen as a subject for to-day's address "Scientific Research in Medicine," for my own work has been mainly connected with research.

That great benefits to mankind have followed the discoveries of recent years is obvious to all of us, especially with regard to the cause and prevention of yellow fever and malaria, and the results already obtained give abundant promise of the good that may result from like researches in the future. Research is a word we hear on all sides to-day. It is the enemy of mere *authority*, that tyrannous spirit which has hampered progress and retarded the advance of scientific medicine for centuries. The spirit of research is restless of restraint, it chafes at limits, it leads us ever onward to new questionings and new discoveries, and these in turn lead on to further inquiries. The spirit of research has come to stay with us as long as the hope and the desire of progress, in any domain of human knowledge, continue to stir the minds of men.

Experimental medicine is responsible for the greatest advances which have been made in our knowledge of the cause, prevention, and cure of disease. These advances have been based on the labours of many workers, exploring often along different lines. Most important discoveries have exerted but a slight direct effect at their inception; their full significance has remained hidden, except perhaps to the few and far-seeing. Of such discoveries the majority have been made by those engaged in research in the realms of pure science, and rarely by those guided by principles of direct and immediate utility. Pure science is in this respect unselfish; its aim is not profit, but truth; it makes for light rather than for gain; yet it is the forerunner of that applied science which is more obtrusively the servant of man. Its guiding principle is that knowledge must be sought for its own sake, and not primarily for its possible or probable applications. And experience has shown that new and fruit-bearing knowledge is seldom revealed to those whose sole purpose is merely utilitarian.

Problems of the greatest importance to humanity are awaiting their solution at the hands of those who are willing to labour thus unselfishly, to devote themselves to science for the sake of science, and not for that of the material service which science can be made to yield. If we study disease, we must study disease for the sake of knowledge; the scientific spirit must enter into our work. Devotion to the study, actuated by such motives, is certain to bring its reward, although the reward may not be material. It seems scarcely necessary to dwell on this before an audience composed chiefly of men belonging to the medical profession, which of all the professions is the most unselfish. All that can be asked is that those who devote themselves to advancing the science of medicine shall bring to their work the same noble motives which guide the ideal physician in his efforts to alleviate the sufferings of his fellow men. The spirit of commercialism should be as foreign to the man of science as it is to the physician, for both should be idealists in the best sense of the word. The fruits of their labours may be gathered by others, but none can rob them of the joy of having brought them forth. The "practical man" may not appreciate such ideals, he may deride those who cherish them; but he is ever ready to use the discoveries of science for his own ends. The reward of the true pioneer does not lie in what is said by "the fool multitude who choose by show"; he seeks only "the wages of going on"; he finds his recompense in delving into the wonderland of nature with all its hidden beauties, and thereby forgetting the smallness that enters into all men's lives. And there is no meanness in the exultation of the explorer when a new peak rises on his view, of the searcher of the skies "when a new planet swims into his ken." The joy of the hunter at the kill is felt by the scientific worker when a fact which has hitherto escaped observation rewards his patient search for truth.

Research has also its joys in the ever-changing picture that it brings before us; the phenomena we study fascinate through their very elusiveness. We must be prepared for many disappointments and much labour lost; we must be ready to give up much of the old, if we wish to grasp the new. We must grow with our growing knowledge, *per ampliora ad altiora*. We must emulate the chambered nautilus:—

> Year after year beheld the silent toil,
> That spread his lustrous coil:
> Still, as the spiral grew,
> He left the past year's dwelling for the new,
> Stole with soft step its shining archway through,
> Built up its idle door,
> Stretched in its last found home, and knew the old no more.
>
> O. W. HOLMES.

We are not all born with instincts fitted for research, but there are many in whom the talent for investigation lies dormant and unused. It should be one of the functions of educational institutions to detect such men, and to lead them on to do the work for which they are adapted, to place the torch within the grasp of hands that are fit to bear it onwards.

ENDOWMENT OF RESEARCH NEEDED.

All who are engaged in teaching and research have met with such men, and often with regret have been forced to see them drift away into other fields of activity, too often from mere lack of means to offer them encouragement. In this country we constantly see men abandon research for practice, though it is all too obvious that, in the interest of science, we cannot afford to lose them. In such cases the distinction attained by research is used but as a stepping stone to

positions which shall secure a means of livelihood. To carry on research successfully a man needs an assured income, so that his mind may be at peace with regard to his material wants. How little encouragement is needed to bring forth such men is seen to-day in many parts of the world. I need scarcely remind you of the devotion to work for its own sake exhibited by such men as Lazear, Myers, Dutton, Plehn, and others, who have sacrificed their lives in the study of tropical medicine. These men consciously risked their lives in their devotion to science, they sacrificed themselves for humanity, and there are many who are prepared to follow in their footsteps.

Is it possible that those who are able and willing to help on human progress can continue to ignore the devotion and self-sacrifice which such men are all too ready to render to their fellow men. We should do all in our power to bring the need in this respect before the educated public, in whose mind there still exists no proper understanding of the material conditions that render scientific research and discovery possible. The average man is scarcely interested in *how* discoveries are made, provided that they *are* made; but an appeal to him based on grounds of public benefit may meet with success; and such an appeal is justified by what has been accomplished.

The needs of experimental medicine are so great and urgent that every means short of the undignified should be taken to bring the matter forcibly before the public, which in this country does so much for charity, so pitiably little for the advancement of learning. Medical research needs endowment. For those who are willing to devote their lives to research, means of subsistence should be found in the interest of the public good. In the regrettable absence of State aid we are forced to appeal to the intelligent public, proving again and again that we need help and still more help, and that we are worthy to receive it at their hands. In this appeal all medical men should join.

The wealthy classes of this country would do well to imitate their brethren in America, where, though the State does much more for learning, private beneficence has nevertheless come to the fore in splendid fashion, endowing universities, institutes, and laboratories in a truly regal manner. It is high time that medical science should become a more favoured object of benevolence in this country.

Our Laboratories and Teachers.

In an address delivered by my friend, Professor W. H. Welch, of Johns Hopkins University, some nine years ago, he said :—

"At the present day no country, no university, no medical school, can hold even a respectable place in the march of education and progress unless it is provided with suitable laboratories for scientific work."

Laboratories are the workshops of those who engage in research, although there are some in which much routine work is done and original research neglected. Laboratory work alone does not constitute research. Laboratories should be thoroughly equipped and guided by men of capacity, by well-trained teachers and investigators who can give their whole time to the work, not by men "deep versed in books and shallow in themselves." The teachers should be men capable of fostering the scientific spirit in medicine and of training the students under them in objective methods. For this purpose the best teachers are unquestionably those who are also investigators, but to fulfil both the functions of teacher and investigator requires so much time that it is almost impossible to perform any other duties. A non-investigator may cram his students excellently for such purposes as examinations, but he will not stimulate his men to progress in independent thought and work. To teach science as it should be taught in properly equipped and organised institutions is far more expensive in the case of medicine that in that of any other professional school; and this is the reason why support is so much required—pure science does not pay for the material needs of those who cultivate it.

In former times our needs were fewer, but it no longer holds true that "what was good enough of old is good enough yet." The result of clinging to the old traditions has brought about an untenable position amongst science teachers in this country. In many of our institutions one man is often expected to perform duties which in more enlightened Germany are allotted in two, three, or even more teachers, each provided with a living wage apart from the necessary support given for their laboratories. Most teachers of science in this country receive pittances of which few are sufficient, many totally inadequate. The same holds for many of our laboratories, which remain ill-provided with the means of making use of the costly bricks and mortar of which, in some cases, they are constructed. I know of cases where even university teachers have to sacrifice a large share of their insufficient salary in carrying on the work of research in their laboratories. It does not suffice to *build* laboratories, they must also be provided with sufficient funds and equipment to enable them to become working entities. In brief, we need living laboratories; we must see that the teacher is supported in a manner commensurate with his functions, and that aid, however modest, is found for such students as show marked talent for research.

I have cited conditions in Germany as an instance of what is done in a neighbouring country by a "paternal government." A closer study of these conditions should certainly tend to ruffle the national pride of an Englishman. Take a single instance with which I am especially familiar—the hygienic laboratories. In May of this year the new Hygienic Institute of the University of Berlin was opened. The building, which contains all modern appliances, was constructed at a cost of £35,000. Ten years ago the Institute received £925 per annum for current expenses, this year the *Etat* has been brought up to £1,750 per annum; this apart from the salaries to the teaching body, and apart from grants for special investigations. Every German university and most towns of importance are provided with Hygienic Institutes, all, as far as practicable, supplied with means adequate to enable them to perform their useful functions. Even in poverty-stricken Italy practically every university is provided with a Hygienic Institute, which serves, as in Germany, as an active centre for research and teaching. Compare this with what is found in this country. There are hygienic laboratories in Edinburgh and Manchester, which

may modestly compare with some of the institutions abroad. Take Oxford and Cambridge, our oldest universities, and we see that no provision exists for research or even proper teaching in hygiene. It seems inconceivable to outsiders that these universities are poor, and cannot found new institutions, and that there are other and perhaps more pressing needs. All I can say, in the words of a talkative Irish patient I knew, "Poverty is no disgrace, but it is mighty unhandy"; and we must continue to hope for better days! We in Cambridge are earnestly hoping that a helping hand may soon be extended to the relief of a condition which cannot persist.

The London School of Tropical Medicine and its Students.

Those of us who have watched the progress of this school from its inception have witnessed a struggle upward which is worthy of all praise and felicitation. This and the sister institution in Liverpool are known throughout the world for the excellent work accomplished by the members of the teaching staffs and some of the students they have sent forth. Your school has a great mission to fulfil. It has to train men in the methods they will be called upon to employ in many parts of the world, and to give them the latest and the best to take with them on their distant journeys. The amount crowded into your courses already shows the rapidly increasing importance of the subjects treated, and the need, some day in the future, of making certain modifications in the plan of study so as to relieve the increasing burden on the teacher and student.

It is to be hoped that the public will second the noble efforts you have made to establish a centre for the study of the diseases which affect the inhabitants of the tropical countries of this vast empire. You have already made your influence felt throughout the world, for the men trained within these walls are constantly being distributed over the empire, and occupy places where they will continue to transmit the stimulus which radiates from this institution. We are at length beginning to see the dawn of better days, when we ourselves can supply men to solve the great problems which it is our duty to investigate without calling in, as heretofore, the men whom Germany and France have trained and lent us in our helplessness.

> How many things by season season'd are
> To their right praise and true perfection!
> (Merchant of Venice, V., I.)

There is much for us to do before we reach "perfection," and we must continue to strive onward and upward. I should like to see some means devised, for instance in this school, to maintain a form of union between those who have enjoyed the opportunity of studying in its laboratories, to see arise a feeling of corporate attachment between the institution and those who have passed through its portals. This might be accomplished by the publication of a Bulletin or the like, which would serve to keep the men in touch with each other and with their teachers after they have left the school. This school, for its part, would surely benefit by fostering the ties which unite it with its former students. The grown-up sons who are out in the world would be encouraged to remember, and on occasions to support and assist their *alma mater*.

The examination which we have instituted at Cambridge cannot fail to react upon the schools where tropical medicine is taught in the direction of broadening and deepening the knowledge imparted to those destined to present themselves as candidates. For instance, it has already become obvious to us that the subjects of tropical hygiene and bacteriology require more attention than they have received at the hands of those desiring to attain our diploma. It is fully recognised that there are difficulties in the way of lengthening the curriculum or of increasing the amount of study in the period which is at present allowed for the courses in tropical medicine. But it is obvious that some gain might result from a stricter choice of subject matter. The study of tropical medicine has often been referred to as a special study, but it embraces a very wide range of knowledge and in practice is constantly spreading into the realm of general medicine. To have a sound knowledge of tropical medicine presupposes as good a knowledge of general medicine. It follows that those who turn to the study of tropical medicine should do so on a basis of sound general knowledge.

The necessity of giving as much *practical* instruction as possible is obvious to us all in an institution such as this. Men can take books with them to the Tropics, but they rely on their practical training for methods. To put a cookery book in the hands of a woman who cannot distinguish between pepper and salt would be to court disaster. Instruction in general principles will make it clear that methods are not stereotyped; they are but aids to obtaining a result; they must be varied according to conditions, and new methods must be evolved to meet unexpected difficulties. That is where the untrained man breaks down; in face of a new situation he cannot go beyond his book. If he has not learned in his laboratory how methods are evolved and adapted to particular problems as they arise he is helpless and barren. He has "no root in himself."

It would be well to sound a warning to young workers as to the value of good methods and thoroughness in work, to counsel patience in research, to emphasise the wisdom of avoiding the tendency to undue haste in publication, and to ridicule the love of publicity and advertisement that has seized upon some of our brethren at home and abroad. These failings discredit not only scientific men, but science itself, for they lead to over-hasty and unwarranted generalisations and to the premature application of discoveries that are but half born. A carelessly worked-out contribution to science, even though it be but a maiden effort, often throws discredit on the good work which a man may do in after years. This damaging result is often risked in the struggle for recognition, but the penalty is sure, for it is at least as difficult to recover a reputation in science as it is in morals. If some seem inclined to deprive others of their due by loud trumpeting and "pushfulness," let us not be of them; reputations so achieved have no enduring quality. At the same time it would be well if those holding established positions did all in their power to assure just recognition of the work done by younger men. To win the praise of the masters should be the

ambition and the attainable reward of the aspirant. Finally, well-trained men, when entrusted with investigations or sent out on expeditions, should not be burdened with too many instructions from committees and the like, composed frequently of well-intentioned gentlemen at home who scarcely understand the conditions at the front. We speak of fair play in sport, let us see that there is more fair play in science.

THE TREND OF RECENT INVESTIGATION.

A survey of recent work in tropical medicine shows us that investigation is chiefly being directed to the study of protozoal diseases. No advances of fundamental importance have been made with regard to malaria since the classical investigations were published with which the names of Ross and Manson, Grassi, Bignami, and Bastianelli will ever remain associated. The earlier work has been confirmed and extended by many investigators. The prevention of malaria by means of mosquito destruction, and other measures directed against mosquitoes, has been tried in various localities, in some instances with success, in others with doubtful results. This is, however, only what might be expected in view of the diversified difficulties which must necessarily arise. Such difficulties must be met and overcome by ripening experience. There has been a veritable flood of malaria literature of recent years, including an annual volume of "Atti della Società per gli studi della malaria," the series commencing in 1900, which has come to us from Italy. Mosquitoes have received an immense amount of attention, after being much neglected in the past. The number of genera and species, and their classification, have become subjects to bewilder all but specialists.

The important discoveries on sleeping sickness, ushered in by the researches of Castellani, a pupil of this school, have been confirmed and extended by Bruce and his collaborators of the Sleeping Sickness Commission. The relation of the flies belonging to the genus *Glossina* to the transmission of the trypanosomes is being actively studied, and many important questions, we must hope, are nearing their solution in connection with this most fatal malady. A contribution has just come to hand from Gray and Tulloch with regard to the multiplication of the parasites in *Glossina*, indicating that the belief recently expressed is warranted, namely, that the parasites undergo a cycle of development within the insects. Of importance in their bearing on the question of the development of trypanosomes in other than their vertebrate hosts are the investigations of Schaudinn on *Trypanosoma noctuæ* in *Culex*, those of Brumpt on certain trypanosomes of fishes, which undergo their cycle of development in leeches, and those of Prowazeck on the rat trypanosome, which he has demonstrated undergoes development in the rat louse (*Hæmatopinus spinulosus*).

Of recent discoveries, the one which to me appears to carry the greatest weight is that of Novy and McNeal. They have been the first to obtain pure cultures of protozoa, maintaining trypanosomes of different species alive *in vitro* for many generations. There is no telling whither the methods they have given us may lead; they directly stimulated Leonard Rogers to experiments, wherein he succeeded, by an ingenious method of his own, in cultivating another protozoon, the *Leishmania*, obtained from cases of kala-azar.

The work on the tick-transmitted diseases known as the piroplasmoses (redwater, &c.), occurring in cattle, sheep, horses, and dogs, has been pursued in various parts of the world with great activity. The results appear to me to indicate, what I believe also holds for human malaria parasites, that we shall in time learn to distinguish different parasites which we at present consider to represent single species.

Toward the end of last year the presence of spirochætæ in the blood of persons suffering from "tick fever" was demonstrated by Philip Ross and Milne. The investigations of Dutton and Todd on tick fever in the Congo Free State, announced in February, afford scientific proof that this disease is transmitted by a tick (*Ornithodoros moubata*) after it has infected itself with blood containing the spirochætæ. This has been confirmed by Koch, if we may rely on what has appeared recently in German newspapers. It is, however, quite premature to assume that African tick fever and European relapsing fever are due to one and the same species of spirochæta; in fact, it is highly probable that this is not the case, although the report in question refers to the spirochætæ as one species. In relapsing fever in Europe the bed-bug (*Cimex*) has long been suspected to be a carrier of the infective agent, a probability which was considerably heightened by Karlinski's observation of motile spirochæta in the bodies of the insects up to thirty days after they had fed on relapsing fever blood. Schaudinn, moreover, informs me that he has observed the multiplication of the *Spirochæta obermeieri* in *Cimex*. These observations, following closely upon those published by Marchoux and Salimbeni, are of greatest interest and practical import. The last-named authors demonstrated that a fatal disease of the fowl in Brazil is due to a spirochæta which is transmitted through the agency of a tick (*Argas miniatus*), and this is capable of conveying the disease even six months after feeding on infected blood. These spirochætæ multiply in the tick and are present in large quantities in its body cavity throughout this period. These observations are very suggestive, since they demonstrate the long persistence of the parasites in their carriers, and render it probable that they will be found to be harboured much longer. Finally, the finding this year of *Spirochæta pallida* in syphilis by Schaudinn and others in man and by Metschnikoff and Roux in experimentally infected apes, cannot escape a passing notice, even though the disease is unfortunately not confined to the Tropics. It is of some interest to note that the close blood relationship existing between the apes and man, demonstrated independently by means of the precipitins by Grünbaum and myself, served as a direct incentive for the experiments of Metschnikoff and Roux, Lassar, and Neisser, which proved that human syphilis is communicable to the chimpanzee and ourang-outang.

Of interest have also been the discovery this year of a number of new protozoal parasites in the blood of different animals, in addition to numerous new species of trypanosoma. I refer to new forms called "leucocytozoa," because they inhabit the white blood cor-

puscles of their vertebrate hosts. Leucocytozoa were first discovered by Bentley in dogs in India, and were described, without sufficient mention of this fact, by James. Another species has been found by A. Balfour in the rat (*M. decumanus*) in Khartoum, and, lastly, W. S. Patton informs me that he has found a species in the squirrel (*Sciurus palmarum*) in India, and apparently observed developmental forms thereof in a louse. Balfour has moreover described a new hæmogregarine occurring in the jerboa (*Jaculus jaculus*), and Graham-Smith, in our laboratory, has found another new endoglobular parasite in the mole. This by no means exhausts the "finds" of this year, but it will suffice to show that British workers are doing their share in furthering our knowledge in this regard.

Of the diseases due to Vermes I can say but little. The discovery of Catto's Schistosomum in this laboratory is familiar to you all. It is interesting to note, following on the experiments with *Ankylostoma duodenale* by Looss, proving that the embryo worm can infect by penetrating through the skin, that Boycott in London, and Tenholt in Germany, have confirmed the fact this year in two experiments conducted on medical men who volunteered for the purpose.

Again, it is apparent that the subject of immunity in relation to protozoal diseases is proving to be one of great difficulty, and the results hitherto obtained indicate that new methods will have to be devised if the problem is to be solved from a practical, and still more from a scientific, standpoint. It is also obvious in this connection that the problems before us can only be solved by animal experiment, and this accentuates the need of our giving an increased amount of attention to comparative pathology as we push on toward the alleviation of the ills to which our own flesh is heir.

Gentlemen, I must apologise for the very sketchy nature of the *résumé* which I have just given you. There are many matters left untouched, including even such important diseases as yellow fever and Malta fever, on which active work has been done. My object has been to seize upon a few salient facts with a view to showing how much has been accomplished within a short period, and how great are the opportunities for the workers in this school who are destined to labour in new fields in different parts of the world. Perhaps what I have said—in no spirit of presumption—will serve as an incentive to some of my hearers. Let me conclude with some wise words from the Talmud:—

The day is short and the work is great. It is not incumbent upon thee to complete the work, but thou must not therefore cease from it.

THE TREATMENT OF SPRUE.

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To deal adequately with the subject of the treatment of sprue it is necessary to recognise the existence of several classes, for, although in all the pathological process is the same, the difference in site of that process gives rise to several clearly-defined clinical entities. To avoid prolixity I will deal only with the types which represent the extremes of these conditions, viz., the acute gastric type and the chronic enteric type, leaving it to be understood that between these there are many gradations.

Acute Gastric (Native) Type.

The *symptoms* are limited to the upper part of the alimentary canal. Oral, substernal, and gastric pain are complained of, and the changes in the mouth are very marked and occur early. Though in an acute exacerbation there may be diarrhœa, the rule is an obstinate constipation. Emaciation is rare, but anæmia may be very great. The latter is of the type of progressive pernicious anæmia, with a high hæmoglobin equivalent. This form of sprue is differentiated from acute gastric catarrh chiefly by this and by the oral condition.

The *treatment* of this form is simple. It is always well, even in the presence of considerable diarrhœa, to administer a full dose of calomel. As such cases are never emaciated, starvation would be the ideal treatment; and for the first twenty-four hours, longer if the patient does not object, only warm water rendered slightly alkaline with sodium bicarbonate is given; then milk diluted with an equal quantity of lime-water may be taken, and this is continued for a week. As nothing but liquids are being taken, it is not necessary at this period to use an anæsthetic paint for the tongue, but the mouth should be frequently rinsed with a 1 per cent. solution of phenol. This tends to allay pain, and certainly seems to conduce to the rehabilitation of the surfaces with epithelium. After the expiry of that time it will be found that the soreness of the mouth and the burning pain in the gullet and stomach are much diminished and that the appearance of the tongue is one of regeneration of epithelium, small particles of casein adhering as a thin film in patches, the first indication of the formation of a "fur." The diet may now be amplified, and it is well to begin with those prepared foods which are partially cooked or are pancreatised, such as Savory's or Benger's. Malted foods are not well borne, causing acidity and pain. Later the farinaceous foods, such as rice, tapioca, &c., are available, and at this stage fruits of the class of banana, water-melon, and papaya are allowed. Having now to deal with solid food, an analgesic paint for the tongue may become necessary, and a 4 per cent. solution of cocaine applied before eating adds greatly to the comfort of the patient. For a further month he must adhere to this *régime*, his only medication being 10 grains of rhubarb, with 5 of chinosol, given in a cachet every morning fasting. When he does begin to amplify his dietary, he will do well to look upon his tongue as his barometer, and any hyperæsthesia of the mouth should lead to a careful revision of the constituents of his meals. In this, as in all types of sprue, fats should be cut off. They are not absorbed, being found largely in the stools, and they are frequently the cause of a relapse. With a return to comparative health the only treatment necessary is that of the constipation, and a morning dose of one of the bitter waters meets all indications.

It is interesting to note that many natives treat an acute outbreak from its incipience by a diet of soft-boiled rice, bananas, and water, and subsequently

adhere to a vegetarian diet, and while doing so keep well.

Chronic Enteric Type.

In the chronic enteric type of sprue we have to deal with a condition which, in many respects, is diametrically opposite to the preceding. The history centres round one prominent symptom — diarrhœa, which, beginning as a morning flux many years ago, has now encroached on all the hours of the day and night. The mouth affection does not come grossly into evidence until late in the disease, but may then be very troublesome. This type occurs chiefly among Europeans, and the sufferers generally seek advice when an acute inflammatory access is superadded to the existing chronic affection, and this is the condition so well described in the classical records of sprue. In these records the treatment has been reduced to the axiom, "put the patient to bed, keep him warm, feed him on milk." The underlying idea is rest, physical and physiological, expenditure of energy reduced to a minimum, both as to the keeping up the bodily temperature and as to the tax on digestion.

After an initial purgative, and under the influence of rest, warmth and milk feeding, amelioration progresses, but it progresses slowly. The progress is as follows: the stools become less frothy, less whitewashy, and smaller in quantity; there is an increase in the amount of urine passed, and any fever which may have been present is lost. About the fifth or sixth day a distinct yellow tinge appears in the stools, which are now small in quantity and glutinous in consistence (custard stools), and flatus can be passed without the necessity of going to stool. During this week there is rarely any great diminution in the number of calls, and this is due invariably to hyperperistalsis. This was demonstrated with the exactitude of an experiment in one of my cases in whom the ingestion of even a mouthful of water was followed by peristaltic action, which, owing to the parchment-like thinness of his abdominal wall, could be traced until the offending material was expelled. The abdomen is now flat, there is little gurgling, the tongue and mouth are recovering their epithelium, as is evidenced by the thin pearly film which covers all surfaces, and pain in the mouth has usually departed, except, maybe, from some erosion not yet healed.

Such is the progress on milk alone, and while, broadly speaking, it covers all indications, an analysis of its factors may be of profit. When such a case comes for advice we have to deal with a patient exhausted partly by the drain from the bowel, partly by his inability to absorb nourishment, but chiefly by toxic absorption. His superadded symptoms, oral, substernal and rectal pain, anæmia, breathlessness, insomnia, can afford to stand over; the demand is for nourishment, and that demand is imperative. To accomplish this his alimentary canal has, as rapidly as may be, to be brought into a condition which will make absorption possible. With an intestine full of a seething fermenting mass but imperfectly removed by purgatives, rest, even in bed, is impossible, and so also is any chance of nutrition. The tendency has been to flout drug treatment, and to assume that no drug has any effect on the course of the disease, but, while adhering to the fundamental principles which have been laid down by Thin and Manson, a great deal may be done by judicious intervention to accelerate the rate of progress. The first step in that intervention is to deal effectively with the septic contents of the bowel, and the means which I have found most satisfactory is to administer calomel in the way advocated by Bouchard in enteric fever: 40 centigrammes divided into twenty doses, one of which is given every hour. It is rare, indeed, that all the doses are required. During their administration only much diluted milk is given. Relief is speedy and decided. The gurgling and even the purging diminish, the feeling of "seething" ceases, the stools become small, deeply stained, and nearly free from odour, and the globose abdomen becomes flat and flaccid. It is thus possible to obtain in a few hours a result which under milk treatment alone it would have taken as many days to secure. It is obligatory on us to maintain the intestinal asepsis thus begun, as under this line of treatment the diarrhœa ceases and the red blood corpuscles increase more rapidly than if no such treatment had been adopted.

Intestinal Antiseptics in Sprue.

There are now many reliable non-poisonous antiseptics: izal, cyllin, acetozone, iodoform, salol, beta naphthol are some of them, but the remedy I have found most useful is chinosol, given in Burroughs Wellcome & Co.'s sugar-coated "tabloids" of 5 gr. each, thrice daily at first, but reduced to twice or even once daily as progress is made. Relieved of the intoxicating process, and with the mucous membrane assuming a healthy tone, as judged by the appearance of the mouth, the quantity and quality of the milk are gradually increased until the patient's limit is reached.

Treatment by Milk.

Frequently difficulty is found in disposing of the amount of milk, 100 oz. per diem assumed to be necessary. This may be due to several causes, but the usual one is purely a question of capacity. The stomach, it must be borne in mind, is in the same condition as the mouth, swollen and inelastic, and any approach to distension is followed by pain. Under those circumstances the addition of milk somatose is indicated. Those cases in which the number and the nature of the stools remain unchanged after several days, a condition ascribed by Manson to *luxus* consumption of milk, I have not met with since the line of treatment suggested above was initiated. But there occasionally happens a case in which, after the effects of the calomel have passed off, the stools remain white (consisting of undigested milk curd), while the amount of urine passed has risen considerably. I have interpreted this condition as one in which the capability of absorption is retained, but that of milk digestion lost, and have treated it by pancreatising the milk and allowing the patient to drink quantities of whey.

When Milk Fails.

If, in spite of precautions, the condition remains unchanged, it is well to recognise that we have to deal with an idiosyncrasy, and to resort at once to the other method of feeding which is still open to us, that

by meat juice, Brand's Essence, chicken broth, &c. These should be given well diluted, slightly warmed, and slightly salt. We have to be content with very small beginnings. We do not expect an immediate increase in weight. It is enough if we are able to stop any further loss. Knowing from the appearance of the tongue, and of the dejecta, and from the increase in the number of red blood corpuscles, that organically favourable changes are taking place, we are encouraged to persevere in the milk treatment, and are enabled to repel the well-meant suggestions of friends and to assure them that any superaddition would be disastrous, for, although on the lines indicated above it is possible to add to the efficiency of the treatment, there is no reason to assume that an earlier departure than the five or six weeks can safely be made. Progress may be expedited by the daily lavage of the lower bowel by a weak solution of chinosol at blood heat. The injection is best administered at low pressure through a long tube with the patient lying on the right side with the buttocks raised. He is encouraged to retain it for a short time, and to aid him in this it is well to stop before the distention of the colon becomes uncomfortable. The condition of hyperperistalsis has been referred to. It often is found that after all flatulence, distension and gurgling have ceased and the stools become comparatively inodorous, their number remains as great as at the beginning of treatment. This is to be met by the administration of codeine in 1-grain doses. In painfully excoriated, possibly prolapsed rectum, a suppository of tannic or gallic acid with $\frac{1}{3}$ gr. morphine is indicated.

Increasing the Dietary.

After the expiry of the five weeks we may begin to add to the dietary, and the first addition is fruit. In the Tropics the fruit to begin with is banana, and of these the large "mealy" varieties are best; but apples, water-melon, papaya, cucumber, are well borne, and can be taken in quantity. Most of the home fruits are available if freed from much of their preserving sugar by washing, and this opens up a large selection —apricots, peaches, pears, strawberries, &c. The orange tribe generally are not admissible, and the same applies to pineapple. After a week or two on fruit and milk, some of the farinaceous foods may be added, then, gradually, fresh fish (boiled and without sauce), vegetables, bread, and, lastly, chicken or very lean meat. Eggs are of doubtful value, not from any doubt of their nutritional value, but from idiosyncrasy on the part of the patient. Sometimes they agree, and are a valuable addition to a limited dietary, but, when they disagree, they do so badly.

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But there are limitations. Should the infiltrative process in the submucosa have affected the entire alimentary tract, there must come a time when, in spite of every care taken, every opportunity seized, we must admit to ourselves that with the contraction of the new tissue the destruction of the overlying absorptive apparatus has advanced to such an extent as to render adequate nutrition impossible. It is

adhere to a vegetarian diet, and while doing so keep well.

Chronic Enteric Type.

In the chronic enteric type of sprue we have to deal with a condition which, in many respects, is diametrically opposite to the preceding. The history centres round one prominent symptom — diarrhœa, which, beginning as a morning flux many years ago, has now encroached on all the hours of the day and night. The mouth affection does not come grossly into evidence until late in the disease, but may then be very troublesome. This type occurs chiefly among Europeans, and the sufferers generally seek advice when an acute inflammatory access is superadded to the existing chronic affection, and this is the condition so well described in the classical records of sprue. In these records the treatment has been reduced to the axiom, "put the patient to bed, keep him warm, feed him on milk." The underlying idea is rest, physical and physiological, expenditure of energy reduced to a minimum, both as to the keeping up the bodily temperature and as to the tax on digestion.

After an initial purgative, and under the influence of rest, warmth and milk feeding, amelioration progresses, but it progresses slowly. The progress is as follows: the stools become less frothy, less whitewashy, and smaller in quantity; there is an increase in the amount of urine passed, and any fever which may have been present is lost. About the fifth or sixth day a distinct yellow tinge appears in the stools, which are now small in quantity and glutinous in consistence (custard stools), and flatus can be passed without the necessity of going to stool. During this week there is rarely any great diminution in the number of calls, and this is due invariably to hyperperistalsis. This was demonstrated with the exactitude of an experiment in one of my cases in whom the ingestion of even a mouthful of water was followed by peristaltic action, which, owing to the parchment-like thinness of his abdominal wall, could be traced until the offending material was expelled. The abdomen is now flat, there is little gurgling, the tongue and mouth are recovering their epithelium, as is evidenced by the thin pearly film which covers all surfaces, and pain in the mouth has usually departed, except, maybe, from some erosion not yet healed.

Such is the progress on milk alone, and while, broadly speaking, it covers all indications, an analysis of its factors may be of profit. When such a case comes for advice we have to deal with a patient exhausted partly by the drain from the bowel, partly by his inability to absorb nourishment, but chiefly by toxic absorption. His superadded symptoms, oral, substernal and rectal pain, anæmia, breathlessness, insomnia, can afford to stand over; the demand is for nourishment, and that demand is imperative. To accomplish this his alimentary canal has, as rapidly as may be, to be brought into a condition which will make absorption possible. With an intestine full of a seething fermenting mass but imperfectly removed by purgatives, rest, even in bed, is impossible, and so also is any chance of nutrition. The tendency has been to flout drug treatment, and to assume that no drug has any effect on the course of the disease, but, while adhering to the fundamental principles which have been laid down by Thin and Manson, a great deal may be done by judicious intervention to accelerate the rate of progress. The first step in that intervention is to deal effectively with the septic contents of the bowel, and the means which I have found most satisfactory is to administer calomel in the way advocated by Bouchard in enteric fever: 40 centigrammes divided into twenty doses, one of which is given every hour. It is rare, indeed, that all the doses are required. During their administration only much diluted milk is given. Relief is speedy and decided. The gurgling and even the purging diminish, the feeling of "seething" ceases, the stools become small, deeply stained, and nearly free from odour, and the globose abdomen becomes flat and flaccid. It is thus possible to obtain in a few hours a result which under milk treatment alone it would have taken as many days to secure. It is obligatory on us to maintain the intestinal asepsis thus begun, as under this line of treatment the diarrhœa ceases and the red blood corpuscles increase more rapidly than if no such treatment had been adopted.

Intestinal Antiseptics in Sprue.

There are now many reliable non-poisonous antiseptics: izal, cyllin, acetozone, iodoform, salol, beta naphthol are some of them, but the remedy I have found most useful is chinosol, given in Burroughs Wellcome & Co.'s sugar-coated "tabloids" of 5 gr. each, thrice daily at first, but reduced to twice or even once daily as progress is made. Relieved of the intoxicating process, and with the mucous membrane assuming a healthy tone, as judged by the appearance of the mouth, the quantity and quality of the milk are gradually increased until the patient's limit is reached.

Treatment by Milk.

Frequently difficulty is found in disposing of the amount of milk, 100 oz. per diem assumed to be necessary. This may be due to several causes, but the usual one is purely a question of capacity. The stomach, it must be borne in mind, is in the same condition as the mouth, swollen and inelastic, and any approach to distension is followed by pain. Under those circumstances the addition of milk somatose is indicated. Those cases in which the number and the nature of the stools remain unchanged after several days, a condition ascribed by Manson to *luxus* consumption of milk, I have not met with since the line of treatment suggested above was initiated. But there occasionally happens a case in which, after the effects of the calomel have passed off, the stools remain white (consisting of undigested milk curd), while the amount of urine passed has risen considerably. I have interpreted this condition as one in which the capability of absorption is retained, but that of milk digestion lost, and have treated it by pancreatising the milk and allowing the patient to drink quantities of whey.

When Milk Fails.

If, in spite of precautions, the condition remains unchanged, it is well to recognise that we have to deal with an idiosyncrasy, and to resort at once to the other method of feeding which is still open to us, that

by meat juice, Brand's Essence, chicken broth, &c. These should be given well diluted, slightly warmed, and slightly salt. We have to be content with very small beginnings. We do not expect an immediate increase in weight. It is enough if we are able to stop any further loss. Knowing from the appearance of the tongue, and of the dejecta, and from the increase in the number of red blood corpuscles, that organically favourable changes are taking place, we are encouraged to persevere in the milk treatment, and are enabled to repel the well-meant suggestions of friends and to assure them that any superaddition would be disastrous, for, although on the lines indicated above it is possible to add to the efficiency of the treatment, there is no reason to assume that an earlier departure than the five or six weeks can safely be made. Progress may be expedited by the daily lavage of the lower bowel by a weak solution of chinosol at blood heat. The injection is best administered at low pressure through a long tube with the patient lying on the right side with the buttocks raised. He is encouraged to retain it for a short time, and to aid him in this it is well to stop before the distention of the colon becomes uncomfortable. The condition of hyperperistalsis has been referred to. It often is found that after all flatulence, distension and gurgling have ceased and the stools become comparatively inodorous, their number remains as great as at the beginning of treatment. This is to be met by the administration of codeine in 1-grain doses. In painfully excoriated, possibly prolapsed rectum, a suppository of tannic or gallic acid with $\frac{1}{4}$ gr. morphine is indicated.

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during this protracted period of steadily failing strength that raw-meat juice, Somatose, Roborat, Plasmon, and any of the predigested foods which are in our repertory, find a use, and a temporary improvement may be gained; but it can, in the nature of things, be only temporary.

CEREBRO-SPINAL FEVER—SPOTTED FEVER.

By K. McGahey, L.R.C.P., L.R.C.S.,
Yola, Northern Nigeria.

During the month of February, 1905, a very serious and widespread epidemic of cerebro-spinal fever broke out in Yola, a town of 22,400 inhabitants, situated on the Benue River, and about 1,000 miles from the coast.

The epidemic in Yola province lasted from February 12th until the end of April; it spread over the greater portion of Northern Nigeria, travelling in a westerly direction, and was very largely confined to the trade routes.

The months in which it occurred are the hottest in the year, the temperature on several occasions reaching 108° F. in the shade.

The natives state that they have no recollection of any such disease ever having visited them before, but I understand that in other parts of the protectorate spotted fever has been previously recognised.

The first case to occur here was that of an Arab who had just returned from a pilgrimage to Mecca. The villages on the road through which he passed were subsequently attacked by the disease. Whether his advent had any relation to the present outbreak I am unable to say, but it certainly looked very suspicious.

The present epidemic has been no respecter of persons, rich and poor, young and old, males and females, being alike attacked, nor has its distribution been confined to any particular area of the districts visited.

In those towns attacked the disease remained active for from three to four weeks, then suddenly disappeared.

Incubation period.—One of my servants, a boy of 12 years of age, ran away and slept in an infected compound (there being two cases in the compound at the time); he developed the disease on the third day and died on the fifth day. The Residency, where the boy was living, is two miles away from the nearest infected area, and at that time the strictest isolation was being enforced, so that, as far as I know, he came into contact with no infected cases; this case would show that the incubation period was as short as three days.

Food as a source of infection.—One case, a child 3 months old, developed the disease and died; the child was breast fed, and had not received any other kind of food; its mother was healthy at the time, and did not subsequently contract the disease, so that I think in this particular case food did not act as a carrier of the disease.

The disease does not seem to be acutely infectious, I myself going freely amongst them. I knew of one case, however, where a man slept in a house in which a patient had died seven days before; this man afterwards contracted the disease, although he had not visited an infected area after having slept in the infected house.

Prodromata.—No prodromata are noticeable in the rapidly fatal cases, but in those of a more mild form epistaxis, accompanied by a violent headache and a feeling of lassitude, was observed.

Signs and Symptoms.—These were typical, with the exception of the eruption, which was rarely noticed in adults, probably owing to the difficulty of detecting it in dark-skinned races, but in the case of children it evidenced itself in the form of an herpetical eruption on the backs of the hands, wrists and fingers, back of the neck, dorsum of feet, and over the clavicles. The tongue was dry and covered with a thick, white fur. Constipation was the rule. Fever: the temperature was not of a specific kind, no definite course being followed; in the malignant cases the temperature was sometimes subnormal.

Retraction of the head and neck was present in all cases.

Kernig's sign was present in 90 per cent. of the cases examined.

Complications.—Pneumonia, bronchitis, and arthritis were observed.

Sequelæ.—Blindness, deafness, and partial paralysis.

Prognosis.—Favourable in those who survived the first four or five days; the fatal cases as a rule died in from one to three days.

Treatment.—Purgatives and opiates were administered with doubtful result.

Mortality.—3 to 5 per cent. of the total population of those towns attacked, with a death rate of 50 per cent. of the infected cases.

Rapidity of onset was a marked feature of the outbreak. To cite a case: Two men went to draw water from the river about 300 yards off; both these men suddenly became unconscious, and had to be carried back in a dying state.

Malignant cases occurred as a rule during the first week of the outbreak in a town, and the milder ones towards its close.

Isolation.—Strict isolation proved effectual at the Residency, where there is a population of about 250 inhabitants, no cases having occurred there, although the epidemic was raging all around within a radius of two to three miles.

Lumbar puncture revealed a cloudy fluid, somewhat flocculent, and occasionally blood-stained.

Blood examination.—Nothing observed.

Post mortem on a man 30 years of age, who died after five days' illness, and in whom delirium set in on the first day and persisted till the end, gave the following appearances: The membranes at the base of the brain were deeply congested, and fibrinous deposits and some purulent points were discovered beneath the dura mater in the region of the pons and cerebellum; in parts the membranes were adherent to the cortex of the brain. The spinal membranes were similarly hyperæmic, and pus was present in parts beneath the membranes. All the other organs were apparently healthy.

THE

Journal of Tropical Medicine

SELECTIONS

FROM

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Colonial Medical Reports.—No. 12.—SEYCHELLES
(continued).

I think there is an improvement in the health of children here. I continually impress on mothers the importance of breast feeding, and in the bulk of the families here no attempt is made now to give food beyond the breast for the first three months of infant life. As a result the infant mortality has dropped considerably. In 1902 the number of children that died under one year was sixteen, in 1903 the mortality was ten, and in 1904 the mortality was twelve. However, in 1904 in this mortality there were, of the twelve children that died, three children that survived birth only a couple of hours.

Vital Statistics.

Further on can be found the attached tables, showing a comparison of the births, deaths, and still-births of the years 1902, 1903 and 1904, also comparative tables of the ages at which death occurred during these years.

I would like to draw attention to the mortality tables, in order to see what is the dangerous periods to life in Seychelles.

For the first year after birth the dangerous period is very marked; roughly speaking, about one-fifth of the deaths occurred in the first year. If a child weathers the first year the zone of danger commences to diminish, but it is still a critical time. From five years to twenty years the danger commences to diminish, but it is a more dangerous period than from twenty to thirty, when the mortality is less. The most favourable period to life is thirty to forty, after forty the dangerous zone commences again. At sixty to seventy the chances are gone down very low; in fact, from fifty years upwards the danger to life is well marked. During the year 1904 there were two very ripe ages recorded, viz., one of 114 years, and one of 100 years.

It is a matter of congratulation the steady decrease in the mortality of children. In 1902 the number of deaths of children under five years was 28, in 1903 the mortality under five years was 21, a decrease of 7, while in 1904 the mortality under five years was 17, a decrease of 4 as compared to 1903, and compared with 1902 a decrease of 11.

Taking the births as 155 for the year 1904, the deaths as 63, the increase in population for the year 1904 is 92. This increase added to the increase in 1902 and 1903 makes a net increase of 293 for these three years.

1901.	Census taken in that year's population	4,203
1902.	Estimated population to December 31st	4,301
1903.	,, ,, ,,	4,404
1904.	,, ,, ,,	4,496

The number of deaths for the year in South Mahé was 63, a diminution of 3 as compared with the year 1903. I think this can be looked upon as the natural state of affairs. A good many deaths were due to old age, as 16 deaths occurred in people under 80 years of age, 3 deaths under 90 years, and 5 deaths over 90 years of age. Of these over 90 years one had reached 114 years, and the other 100 years.

Taking the estimated population as 4,496, this works out a death-rate of 14·01 per thousand, being a diminution of ·97 per thousand as compared with 1903.

The diseases that principally caused death during 1904 are as follows:—Senile decay, 16; dysentery, 5; pneumonia, 4; syphilis, 4; syphilis hereditary, 5; diseases due to endocarditis, 3.

During the year there were 11 still-births. A curious fact is that for the years 1902, 1903 and 1904, there were exactly the same number.

During the year there were 155 births, a diminution of 14 as compared with 1903. The average birth-rate per thousand for 1904 is 34·47, being a diminution of 3·90 per thousand as compared with the preceding year.

Dispensaries of Anse Royale and Anse Boileau.

The dispensary at Anse Royale was well attended during the year on Mondays, Wednesdays, and Fridays by the poor; during the year there were 400 consultations.

A dispensary is held at Anse Boileau every Thursday morning; the number of consultations for the year was 114.

Further on I have attached tables showing the diseases treated at the dispensary and the number of consultations under each disease.

Vaccination.

I have nothing but praise for the vaccine lymph supplied; it nearly always took first time except when it got over four weeks here, when the lymph seems to lose vitality. It produced large typical vesicles; one case is returned as unsuccessful, but I am of opinion this child is immune, as I vaccinated it with fresh lymph, then I tried it with lymph taken direct from the arm of a healthy child, result always the same.

Successful first time	126
,, second time	19
Unsuccessful	1
Total number of vaccinations	146

Surgeon's Work in Police Cases.

During the year there were twenty-nine police cases at Anse Royale of wounds and blows, and six at Anse Boileau. The bulk of the cases were trivial, slight blows and contusions; some of the wounds were of a more serious nature that could be called dangerous to life.

On July 8th the Sub-inspector of Anse Royale reported the death of a man at Anse Louis under suspicious circumstances. Accompanied by the Sub-inspector I examined the body. I found a few slight marks on the head of no importance. From an investigation made by the Sub-inspector it was proved that the man was drunk on the evening before; he must have fallen at the place where the body was found, thus accounting for the wounds on the head. From examination of the body no apparent cause of death could be found, so a certificate was given of cardiac failure, following alcoholic poisoning.

TABLE OF DISEASES CAUSING DEATH IN SOUTH MAHÉ, FIRST AND SECOND DIVISIONS, DURING 1904.

Causes of Death	Under 1 Year	Under 5 Years	Under 20 Years	Under 30 Years	Under 40 Years	Under 50 Years	Under 60 Years	Under 80 Years	90 Years	Over 90 Years	Total	Remarks
	2	...	..	...	...	...	...	...	...	...	2	
Apoplexy	...	...	...	...	...	...	...	2	...	...	2	
Anæmia	...	...	1	...	...	...	...	...	...	...	1	
Ascites	...	...	...	1*f*	...	...	...	...	...	...	1	
Decay Senile	...	...	...	...	...	...	1*b*	7	3	5*a*	16	
Dysentery...	1	2	...	...	...	...	...	2	...	...	5	
Endocarditis	.	...	1	..	1*c*	...	1	...	...	...	3	
,, congenital ...	1	...	...	...	...	...	...	...	...	...	1	
Gangrene of foot... ...	...	...	..	...	...	...	1	...	...	...	1	
,, ,, lungs ...	...	...	...	...	...	2*c*	...	...	...	...	2	
Gastritis	1	...	...	...	...	...	...	...	...	...	1	
Hemiplegia	..	...	...	...	...	1	1	...	...	...	2	
Hernia	...	...	1	...	...	...	...	...	..	...	1	
Influenza	...	1	...	...	...	..	...	..	...	...	1	
Leprosy	...	...	...	...	...	...	...	2	...	...	2	
Pneumonia	...	...	...	...	..	1	2	1	...	...	4	
Peritonitis	...	...	...	1	..	...	...	...	...	...	1	
Syphilis	...	...	...	1	...	...	1	2	...	...	4	
,, hereditary ..	2	2	1	...	...	...	...	...	...	...	5	
Starvation	1*d*	...	...	...	...	...	...	...	...	...	1	
Tuberculosis	...	...	...	..	...	...	...	...	...	...	...	
Unclassified cause given by relatives :												
Fevers	1	...	...	...	...	...	2	...	...	...	3	
Infantile disease ...	3	...	...	...	...	...	...	...	...	...	3	
Worms	...	...	1	...	...	...	...	...	..	...	1	
	12	5	4	4	1	4	9	16	3	5	63	

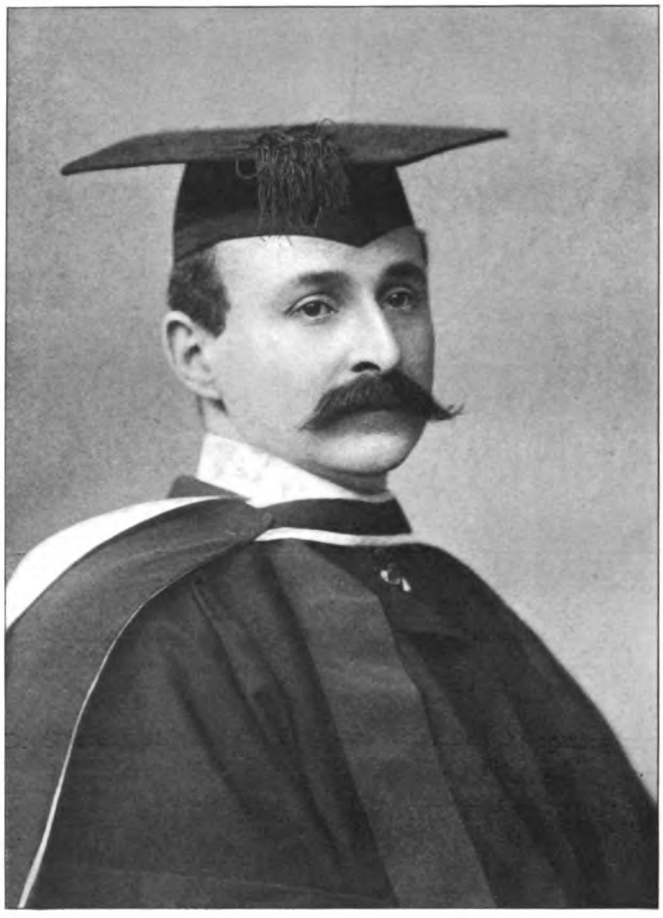
a Senile decay: there were two people who died at the ripe age of 114 years and 100 years.
b This person was declared as 53 years of age at death. I am of opinion the age was nearer to 70.
c One of the cases of gangrene of the lungs could also be declared under tuberculosis.
d Child of a coolie immigrant at Pte. au Sel camp. The child lived 3 days. Mother refused to give it any nourishment, as it seemed to be the caste custom. Child, being a puny infant, gave up the contest, and died on the 3rd day.
e One of the cases of endocarditis was due to alcoholic excesses and exposure. I made a complete inquiry into the case.
f A *post mortem* was made in this case.

COMPARATIVE TABLES OF THE AGES AT WHICH DEATH OCCURRED DURING THE YEARS 1902, 1903 AND 1904.

Years	1 year	Over 5	Over 20	Over 30	Over 40	Over 50	Over 60	Over 80	Over 90	Over 90 years	Total and Remarks.
1902	16	12	1	9	5	7	4	2	3		59 deaths during 1902
1903	10	11	10	8	4	5	5	9	—	4	66 ,, ,, 1903
1904	12	5	4	4	1	4	9	16	3	5	63 ,, ,, 1904

COMPARATIVE TABLES OF BIRTHS, DEATHS AND STILL BIRTHS DURING THE YEARS 1902, 1903 AND 1904.

Year	Births	Deaths	Still Births	Remarks
1902	157	59	11	Births in 1903 exceeded that of 1902 by 12, while the births of 1904 show a diminution of 14 when compared with 1903.—Deaths in 1903 exceeded that of 1902 by 7, while 1904 shows a diminution of 3 when compared with 1903.—Still births for the years 1902-03-04 show no change.
1903	169	66	11	
1904	155	63	11	



GEORGE H. FALKINER NUTTALL, M.A., M.D., Ph.D., F.R.S.,

University Lecturer in Bacteriology and Preventive Medicine, Cambridge.

Dr. NUTTALL delivered the Inaugural Address at the opening of the Winter Session, October 11th, 1905.

The following were the complaints treated at Anse Royale and Anse Boileau Dispensaries:—

Disease.	Anse Royale. No. of Consultations.	Anse Boileau. No. of Consultations.
Anæmia	36	—
Asthmatic Bronchitis	1	—
Asthma	3	5
Amenorrhœa	3	2
Antrum, diseased	1	
Ascites	5	
Bronchitis, acute	2	1
,, chronic	4	5
Bright's Disease	5	1
Constipation	5	1
Colitis	5	
Colic	—	1
Climateric	10	
Conjunctivitis	1	
Diarrhœa		1
Dysentery	10	9
Dental abscess	3	
Dysmenorrhœa	1	
Debility	24	16
Doubtful	1	—
Endocarditis	3	—
Elephantiasis	—	4
Fibroid of uterus	20	—
Gastritis	4	
Gonorrhœa	21	4
,, warts	1	—
,, bubo	4	
,, rheumatism	2	—
Gangrene of lungs	2	—
Hernia	3	1
Hysteria	14	7
Hepatitis	8	
Hemiplegia	—	4
Injury to eye	1	—
,, ,, foot	8	
,, ,, finger	1	1
,, ,, left side	1	
,, ,, shoulder	2	

Disease.	Anse Royale. No. of Consultations.	Anse Boileau. No. of Consultations.
Indigestion	1	—
Influenza	2	—
Iritis	3	2
Leprosy	7	4
Laryngitis	3	—
Lumbago	2	—
Leucorrhœa	1	—
Marasmus	2	1
Malingering	3	1
Migraine	1	—
Malarial Fever *	9	—
Miscarriage	3	—
Neuralgia	1	
Neurasthenia	2	4
Osteitis	43	—
Otorrhœa	3	—
Ovaritis	—	18
Prickly heat	2	
Pneumonia	5	—
Phthisis	3	—
Rheumatism	14	8
,, muscular	1	—
Syphilis	37	2
Scabies	3	—
Sciatica	2	—
Syphilis, hereditary	1	6
Torticollis	4	1
Ulcers, tropical	6	—
,, syphilitic	2	
,, varicose	2	1
,, cornea	8	
Varicocoli	1	
Wounds of arm	1	
,, ,, leg	6	—
,, ,, head	1	—
,, ,, finger	1	
Worms (*Ascaris lumbricoides*)	2	3

* Principally with coolies, Pt.-au-Sel Camp. Indian immigrants.

COMPARATIVE TABLES OF THE PRINCIPAL DISEASES CAUSING DEATH IN ST. MAHÉ DURING THE YEARS 1902, 1903 AND 1904.

Diseases	Year 1902										Total 1902	Year 1903										Total 1903	Year 1904										Total 1904
	Under 1 year	Under 5 years	Under 20 years	Under 30 years	Under 40 years	Under 50 years	Under 60 years	Under 80 years	Under 90 years	Over 90 years		Under 1 year	Under 5 years	Under 20 years	Under 30 years	Under 40 years	Under 50 years	Under 60 years	Under 80 years	Under 90 years	Over 90 years		Under 1 year	Under 5 years	Under 20 years	Under 30 years	Under 40 years	Under 50 years	Under 60 years	Under 80 years	Under 90 years	Over 90 years	
Apoplexy																														2			2
Asthma		1	3		1						4																						
Accidents, &c.					2						2																						
Aneurism							1				1																						
Cancer						1					1																						
Cardiac disease						1					1		2	1		1	1	1	2			8	1		1		1		1				4
Dysentery		1	2								3		3	2				1				6	1	2						2		5
Elephantiasis																		1	1			2											
Gastritis		2									2	6	1					1				8	1										1
Gangrene																1				1		2						2					2
Hernia							1				1															1							1
Hemiplegia							1	1		2	4								2		1	3					1	1					2
Leprosy					1		1				2																			2			2
Peritonitis		2						1			2															1							1
Pleurisy				1							1																						
Pneumonia	1		1	1	1	1	2				7		2	3	3							8					1	2	1				1
Senile decay									1	1	2								3		3	6						1	7	3	5	16
Urethral disease						1					1																						
Syphilis					1						1		1			1	1					3	2	2	1	1			1	2			9

Medical Report on the Praslin District for the Year 1904.

By Dr. R. Laidlaw, Assistant Medical Officer.

During 1904 the health of the community has been exceedingly good, the birth-rate high, and the death-rate low.

The Leper Home and Pauper Camp have fed and ministered to the needs of their inmates as in past years; and, considering their depressing circumstances, there has been a fair amount of contentment.

Various efforts have been made to entice the inmates to engage in some form of light work, but without success. Basket-making, brush-making, and plain-stitching have been proposed to some of the more active, but only to be quickly abandoned. They seem quite unable to see that some light occupation would lessen the monotony of their life, and add to its pleasures. A little is done by one leper in the shape of a vegetable garden; and a few others engage occasionally in rock-fishing. One female pauper, said to be over a hundred years of age, finds her chief delight in ground weeding, and in cleaning in front of her little house. No other male or female pauper shows a like spirit.

In December, 1904, the inmates were the same in number as in January, 1904, viz., 9 lepers and 10 paupers.

At St. Anne and Grande Anse, Praslin, and at La Digue, the three dispensaries have given free medical help to all needy cases. The number treated during the year has been:—

243 new and 165 old cases,

as against 159 new and 143 old cases the year before.

In an appendix a table is given of the more frequent diseases treated. All grave cases requiring continual care have been sent as usual to the hospital in Mahé.

No epidemic disease appeared in the district during the year; and no case of measles (so prevalent the preceding year) has occurred. A few sporadic cases of chicken-pox appeared, but they caused no serious trouble, and its spread was limited to the household where the first case arose.

The dreaded disease of leprosy is apparently stationary. The fresh cases arising outside Round Island simply counterbalance the deaths. A family liability to the malady is usually traceable in every fresh case. Even if the last new remedy, "leprolin," fails to be a specific, the gradual extinction of the disease from general causes is very probable. Strict segregation of all existing cases would probably hasten this desirable result.

The round-worm is still a widespread plague. As many as 50 worms have been passed, in some cases, after one dose of antidote. In one case 98 worms were.

Besides wounds arising from assault, incised wounds from cutting instruments have been common. In three cases the fingers of children have required amputation, and also the finger of an adult. In this case the neglected wound had mortified.

The estimated total population of the district on January 1st, 1904, was 2,982, and during the year the deaths among them were 42 in number. During the preceding year the deaths numbered 65.

Seven of the deaths during last year were those of children under twelve months. Mistaken methods of feeding are often to blame.

One hundred and seven births occurred during the year, outnumbering the deaths by 65. The one regrettable feature is the large proportion of illegitimate births. One-third of the whole (32 out of 107) were born out of wedlock.

The vaccine imported from home has given fair results on the whole, except that received at the close of the deranged arrival of mails.

Its delay in transit then seems to have wholly destroyed its activity.

The vaccine used in December was successful in almost every case.

APPENDIX.

Nature of Cases occurring in Dispensary Practice.

Abscess.
Adenitis.
Amenorrhœa.
Anæmia.
Amygdalitis.
Anasarca.
Ascites.
Asthma.
Blenorrhagia.
Bright's Disease.
Bronchitis.
Bruises.
Bubo.
Cardiac Palpitation.
Valvular Disease.
Caries.
Cataract.
Catarrh.
Constipation.
Conjunctivitis.
Cystitis.
Dentition fever.
Dog-bites.
Dysentery.
Dysmenorrhœa.
Dyspepsia.
Eczema.
Emonisis Menus. ?
Epilepsy.
Epididymitis.
Fever.
Fibroid tumour.
Fractures.
Gastritis.
Goitre.
Gonorrhœa.
Hæmoptysis.
Hordeolum.
Hysteria.
Impetigo.
Insomnia.
Keratitis.
Laryngitis.
Leprosy.
Locomotor Ataxia.
Marasmus.
Metritis.
Menorrhagia.
Neuralgia.
Nephritis.
Ophthalmia.
Oesophagitis.
Orchitis.
Ovaritis.
Paralysis.
Periostitis.
Pleurisy.
Pruritus.
Retinitis.
Rheumatism.
Senile debility.
Spinal paralysis.
Stomatitis.
Syphilis.
Tic douloureux.
Tonsillitis.
Toothache.
Tumour.
Ulcer.
Whitlow.
Worms.
Wounds.
Varicella.
Vomiting.

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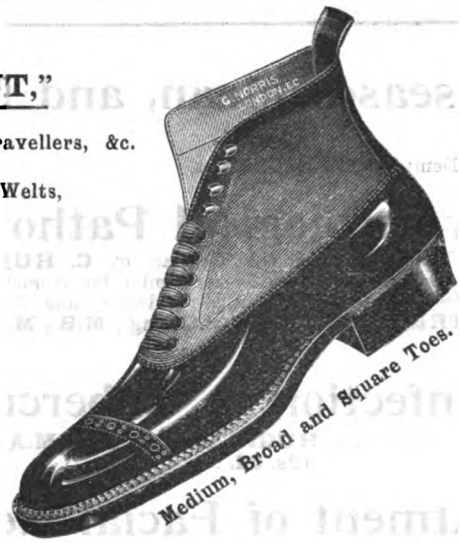
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What struck me as a very strange coincidence was the simultaneous appearance of spotted fever in New York, Europe, and Northern Nigeria. Was the sun-spot, which was visible at that time, a predisposing factor in its production?

EPIDEMIC INFECTIOUS PNEUMONIA, PLAGUE AND INFLUENZA IN INDIA.

By Major G. H. Fink, I.M.S., M.R.C.S., L.S.A.Lond.

In the *British Medical Journal* of October 27th, 1900, there is an interesting account of "Plague and Influenza, Mixed Infection in Horses," by Dr. Hossack, the District Medical Officer of Calcutta, with a bacteriological report by Dr. J. Nield Cook, D.P.H., Health Officer of Calcutta.

This point of mixed infection in connection with pneumonia is especially interesting at the present time to those who have carefully studied and watched the course of the influenza epidemic since it first appeared in India, and who also have had the opportunity of watching an outbreak of epidemic infectious pneumonia.

In 1885-86 I was medical officer to the 14th Bengal Lancers at Loralai, South Afghanistan, and had collateral charge of a Bombay mountain battery and infantry respectively. I also had medical charge of a large number of followers and coolies who were constructing the earthworks of a fort and barracks. With the consent of the officer commanding the post and the political agent, I was permitted to open a civil dispensary for the treatment of the civil population, who soon availed themselves of European medical aid. During this term of office, I had the very exceptional opportunity of witnessing an epidemic of remittent fever of a severe type, followed by epidemic infectious pneumonia in the beginning of the winter months and spring, in a climate which was exceedingly dry with extremes of temperature. An account of this epidemic was submitted by me to the pages of that valuable and most instructive journal of Indian medical and surgical science, *The Indian Medical Gazette*, with a photograph of the whole encampment. I showed the mode of invasion; the arms of the service and others it attacked; its behaviour among them; and the probable cause, or causes of its spread; and I think I then conclusively proved the epidemic and infectious character of the pneumonia, which had a special predilection for those who looked physically the strongest, but who, in the majority of cases, were sodden with malaria, viz., the 14th Bengal Lancers, who had come from a notoriously malarial area (Meean Meer, Punjab), and who were also somewhat unfortunate in being on the right wing of the encampment close to some cultivations which were periodically irrigated. The disease also broke out among the horses of the 14th Bengal Lancers, but whether it attacked the horses or the troops first, or both together at the same time, I feel I am not in a position to fully confirm, although I am disposed to feel—for reasons I shall give hereafter—that it attacked the grass-cutters' ponies first; was then communicated to the horses of the regiment which were tethered close to the men's tents; and last of all to the men, among whom it spread in various directions. I am also disposed to feel that it played its part with greater severity among the men of this particular regiment through overcrowding and bad ventilation, owing to the fact that when winter set in they covered up the doorways of their small bell-shaped B.C. tents with waterproof sheets with the idea of shutting out the cold, although the cold was not the immediate cause of this disease.

Major Duncan, M.D., I.M.S., in an article in *The Lancet*, vol. I., for 1895, p. 193, tells us of an outbreak of this same disease among the 23rd Pioneers, who were in the Peshin Valley, and who marched thence to Umballa, Punjab, on November 25th, 1885, and from that date to April 26th, 1886, there occurred in his regiment thirty-three cases of epidemic infectious pneumonia. We were quartered in the Bori Valley in the same years as the 23rd Pioneers were in the Peshin Valley, and the former valley runs at a somewhat acute angle into the Peshin Valley towards the Zhob country. The grass-cutters of the 14th Bengal Lancers used to obtain grass for the horses from the direction of the Peshin Valley. The curious point about the outbreak in these two regiments is, that both were affected about the same time of the year; but apparently the 23rd Pioneer had their worst time after leaving the Peshin Valley and arriving in Umballa, whilst the 14th Bengal Lancers were attacked badly in the Bori Valley itself; very slightly along the line of march; and not at all on arrival in Sialkote, Punjab. It appears, therefore, that the disease germs must have been carried by the Pioneers from the Peshin Valley to Umballa. Had the regiment not moved about this time—which was a very fortunate occurrence—the outbreak might have been very much severer in the Peshin Valley. Major Duncan tells us that the sick and death-rate of that regiment for 1885 were higher than in previous years, for which, doubtless, the epidemic of infectious pneumonia was largely responsible.

It would have been somewhat interesting to have known what particular disease or diseases prevailed during their stay in the Peshin Valley; along the line of march; and at Umballa on arrival, for the year 1885, in order that the proper focus of the outbreak might be more definitely fixed.

However, I take it for granted that the Peshin Valley was the real focus whence the germs were carried, for the 14th Bengal Lancers in the neighbouring valley also suffered similarly, which is therefore strong presumptive evidence in favour of the Peshin Valley. Before entering into the subject of the outbreak of epidemic infectious pneumonia above mentioned, I would relate a rather striking circumstance in connection with the carrying or conveyance of germs which is somewhat interesting. Previous to the outbreak of pneumonia, malarial fever of a remittent type was prevalent among a large number of men and followers, and several of the officers, including myself, were also down with this disease in the summer and autumn months. It was not to be wondered at in the officers and men of

the 14th Bengal Lancers coming from Meean Meer; but others, belonging to the Bombay Presidency, were also attacked, one of them, a lieutenant in the Bombay Mountain Battery, having a temperature of 107° F. with delirium, and was invalided home to Europe, whilst I myself had a temperature of 106 F. with gastric symptoms.

In the winter, and on the march back to India, we were fairly healthy. On arrival in Sealkote and for some time after, I suffered from malarial attacks periodically; and I noticed that a favourite woollen rug which I used in the Bori Valley, and which had been covered with sand time after time, when used by me close to my body, always brought on an attack of malarial fever, until I had it thoroughly boiled and put into perchloride solution. The attacks then extended to longer intervals, though they did not disappear entirely, but became less and less severe.

Similarly, I see no reason why the germs of infectious pneumonia should not have been carried away by the 23rd Pioneers to Umballa, and when a suitable opportunity of recrudescence occurred, they became active and produced an epidemic.

When I took over medical charge of the 14th Bengal Lancers they had suffered from malaria fever and scurvy, having marched from Meean Meer to Gumbaz first, and then on to the Bori Valley in May, 1885. Being strong, powerful men of the agricultural race, known as Jâts, accustomed to plenty of good milk and vegetables in the plains of India, they suddenly found that these articles of diet were not to be procured so readily and plentifully, and they were compelled, therefore, to content themselves with their rations of flour, pulse, and "ghi" (clarified butter).

When winter set in their health had deteriorated, and they felt the cold intensely. Opium, which they were accustomed to, and which is an excellent thing in a malarious region, in moderation, proved disastrous to them as soon as their bodily health gave way and pneumonia broke out, being a contra-indication from a therapeutic point in diseases of the latter kind.

Epidemic infectious pneumonia is a disease which always seems to play a very serious part wherever it breaks out, and it appears to me, that in the case of opium eaters as, in India, it is likely to assume a still more serious character, and the symptoms become so altered in some respects, as to cause the disease to closely resemble plague, unless every care be taken to make a bacteriological examination of every patient's sputa. The North-Western Frontier of India is famous for outbreaks of this disease, and it is curious that the troops that are generally, or rather, that were generally, quartered in the Bori and other valleys came from the Punjab and Bombay Presidencies.

Would it not, therefore, be possible, that the germs of infectious epidemic pneumonia might have been distributed by followers, animals, and fomites; and in many cases have been mistaken for plague in the opium eaters, which Dr. Hossack's cases mentioned in the *British Medical Journal* as "mixed infection" would support? It is a striking coincidence that the disease should have been so bad in the Bombay Presidency and Punjab; but, if epidemic infectious pneumonia, which is almost as serious as plague, could have its symptoms somewhat defaced by occurring in opium eaters, it appears to me that there is a good deal in the theory I have now advanced, namely, that influenza, plague, and epidemic infectious pneumonia are so intimately connected that it is almost impossible to diagnose the one from the other, under suitable conditions of development in certain countries.

It is a strange fact that, after the 14th Bengal Lancers left the Bori Valley, Major L. J. Pisani, I.M.S., who was on duty in the Khojak along the same route, discovered typhus fever cases in that neighbourhood, which is also a most fatal disease and might in some cases appear to resemble plague in dark races.

Epidemic infectious pneumonia is not unknown in Europe. Dr. Bruce Low gives us a very clear account of an alarming epidemic at Rands, Northamptonshire. From December, 1890, to March, 1891, no less than 155 children and infants had been attacked by pneumonia, and 104 adults and children had suffered from a "less grave malady regarded as tonsillitis, or sore throat"; "of the graver malady" he says, "it always began with vomiting and great drowsiness, occasionally there was a convulsion; enlargement of the parotid and cervical glands was also noted" (*Lancet*, Vol. II. of 1891, p. 493). In the *Lancet* of 1891, Vol. II., page 1,357, there is also a report of the death in Vienna of the Grand Duke Heinrich from pneumonia. It spread to his room attendant, who died, and then to his aide-de-camp, Colonel Kopal, and physician, Professor Oser, who were seriously ill from it.

Contagious pneumonia is also described by Dr. Frederick H. Daly, M.D., of Hackney Downs, N.E., in the *Lancet*, Vol. II. of 1894, p. 322, where three cases —man, wife, and doctor—were attacked one after the other, and died from it.

Dr. Douglas Heath also gives an interesting account in the *British Medical Journal*, Vol. I., for 1897, p. 911, of an outbreak he observed.

My object in mentioning these cases which have occurred in Europe at a comparatively recent date, and since the influenza epidemic swept over Europe and Asia, is to show, that there is such a disease as epidemic infectious, or, contagious pneumonia, known even in Europe, and that it selects about the same season of the year for an outbreak as in the North-Western Frontier of India. It is to be noted in the smart epidemic mentioned by Dr. Bruce Low that 104 adults and children had also suffered from a "less grave malady regarded as tonsillitis, or sore throat." He also states that the graver malady always began with "vomiting and great drowsiness," and "occasionally there was a convulsion"; further, that "enlargement of the parotid and cervical glands was also noted." These are points of extreme interest in dealing with the subject of my paper.

The coincidence of the existence of influenza with plague in India is not more strange than that of epidemic infectious pneumonia with plague; and, as regards mortality in the latter two diseases, they are equally high, and bear a close connection in their symptoms. It remains, therefore, for bacteriology to point out to us the true cause of the high mortality from epidemic infectious pneumonia as compared with ordinary pneumonia or the pneumonia after influenza, and what is the real nature of the contagion in each

of these diseases. It seems to me that as closely as malarial fever and kala-azar (or, as it was formerly termed beri-beri,) are associated, so are the above-named groups of diseases in which pneumonia plays so dangerous a part when it occurs.

I would now refer to the symptoms of the three types of influenza which appeared in Europe and Asia of recent years, and swept largely over India in 1890, entering the Bijnour district in the North-Western Provinces and Oudh, where I was civil surgeon in the same year, and then becoming lost and irrecognisable, if you like to term it, although I believe it has lingered with us ever since, having struck its roots deeper into systems of the human body which offered "pabula" for its higher or graver development, going on a new career, as it were, of destructive invasion; finding new and fresh fields of conquest, until it defies detection, so vast and extensive and rapid are its movements.

I had excellent opportunities of studying and acquainting myself with the influenza epidemic of 1890 and following years, both by observation of a large number of my patients as well as personal acquaintance with the disease.

There were three distinct stages in this epidemic which produced three distinct types of the disease, these I described in an article contributed to the *Indian Medical Record*. The first type was accompanied with headache, coryza, and catarrhal symptoms; the next, with lumbar pains of the rheumatic or dengue type, accompanied by sleeplessness and great exhaustion at the termination of the attack; and, thirdly, a still graver type, when the tonsils and pharynx, together with the posterior nares, became affected, and there was cough with pain in the throat, expectoration of a thick gelatino-mucoid substance slightly rusty in colour; and, in some cases, the glands (parotid sub-maxillary) gave suspicion to an attack resembling mumps. It seemed as if all the germs in creation had been let loose from all the laboratories of the world and were settling wherever they found the best pabulum for their procreation and development. The cough in this last type was most obstinate.

In 1893, I was attacked for the third time with influenza of the third degree, if I might so call it for convenience sake, and went up to a hill station for change of air. On arrival, I learnt that several cases of diphtheria had broken out, some days previous scarcely a week had passed when the manager of the hotel where I was staying with my family, came to me in a terrible state of excitement and fear, and asked me to see his niece who was suffering from diphtheria and could not breathe. I advised him to send for the Civil surgeon, but he said there was no time, and that if he did, he would probably be a long distance away attending other patients. I then, on the understanding that it was a case of emergency alone, which he might explain to the Civil surgeon when he saw him, attended his niece, a girl of sixteen years of age, and found her suffering from exactly similar symptoms as I had experienced in the plains, and which apparently were unknown in the hills, and had given cause for alarm as diphtheria. The symptoms were in no wise as urgent as diphtheria; nor were they distressing enough to call it such, and there was no membrane present which is so characteristic of that complaint. Eucalyptus treatment; combined with salicylate of quinine internally; with hot fomentations, with belladonna and linseed poultices externally to the throat; and pil. morphiæ grain ¼ at bed-time, to be repeated if necessary; together with beef-tea, soup and milk, restored the patient to health within a few days.

In these attacks, the system appears to be most tolerant of opium and morphia in patients who suffer from severe pains or sleeplessness, which I know from personal experience. During convalescence, port wine is an excellent addition to the treatment as a stimulant, and is very necessary, in my opinion, to restore the action of the heart and circulation, which are very depressed and sluggish. When pneumonia is present opium is contra-indicated.

A few days later, my children, about two years of age, were attacked similarly. I was told that there were several other children in the hotel who had been attacked with throat troubles. I treated my children with cochineal solution, carbonate of soda, and simple syrup internally; belladonna, hot fomentations, externally; and chloral hydrate grain ss. at bedtime to be repeated if necessary in water, and they were well within ten days. It is a curious fact that just about the time this outbreak occurred in the hotel, there was an extraordinary profuse shedding of pollen from the cones of the deodar trees (pines). Every breath of air brought it down in great showers, and the children with their servants used to amuse themselves by throwing stones and sticks up against the branches overhead to create these showers of golden dust, which caused amusement amid the sneezing and coughing.

This fine pollen permeated every part of the hotel, and lay thick on the railings of the verandahs. It seems to me that this powder must have proved very irritating to the throats of the young children and infants, and, in a lesser degree, to the adults; and it struck me very much at the time as being connected with the outbreak. I do not know whether any others have observed this point in India or in Europe.

It is very likely that the influenza bacillus has a strong proclivity for the pollen of the pine tribe, and might find it suitable pabulum to live upon extra-corporeally. On the other hand, it might be a mere coincidence; but I do not see why certain disease germs should not settle in the pollen of certain plants and trees which flower periodically, like the flowering of the bamboo is considered in the East as an advent of famine. Moreover, germs of disease are so closely connected with the lower forms of vegetable and animal life, that it is a feasible explanation for periodical outbreaks of certain diseases which move in cycles.

These cases of influenza resembled the "lesser malady" described by Dr. Bruce Low. My cases of the third degree were not purely tonsillitis or sore throat, and they certainly were not diphtheritic. Nitrate of silver solution, x or grain xx to ʒ locally applied, aggravated, rather than relieved the throat, as I found in some cases in which I had tried it in the plains. The symptoms resembled tonsillitis in some respects; but there was a thick gelatino-mucoid secretion, slightly rusty, which adhered closely to the pharnynx and naso-pharyngeal region, forming a crust

at times, which, on removal, brought away with it a few drops of blood.

After the influenza epidemic had—as I supposed—spent its force in its third degree, I wrote a report on the subject of its appearance and of the gradually increasing symptoms each year, giving its types; and I then gave my opinion (judging from the past history of this disease,) that it was the precursor of some graver malady or epidemic. I am still of the opinion that it is always the precursor of something far graver, which the history of events in India since 1894-95 proves to be true; but I feel that I was mistaken in supposing that influenza had expended its force when it reached its third degree.

I do not think that the alteration of my opinion that the disease had not (as I supposed in the first instance that it had) spent its force is to be wondered at, for, on further reflection, if it be considered that a disease of this nature starting with mild symptoms, but attacking large numbers and prostrating them as it did, eventually pervades the muscular, fibrous, and osseous systems, and penetrates the glandular portions of the body, it would not be at all unreasonable to believe that it could steal a march further and spread into the lymphatic, nervous and other systems, creating troubles of a still graver character, and unfitting the human race in a multitude of ways. The graver maladies which I predicted at the end of the epidemic of influenza in its third degree, as before mentioned, are a continuation of the same epidemic with more serious or mischievous results. How these latter are produced is the point which requires investigation, and this can only be done by observing the behaviour of the poison in its various degrees from stage to stage, or from year to year. There might be scores of circumstances or influences outside the human body which are capable of advancing the development of the poison, viz., in the insect; the vegetable; or even the mineral kingdoms, which would offer suitable "pabula" for colonies of microbes or bacilli, lying in wait for their best opportunity, or season, to invade the tissues of the human body through one or other channels of entry. Atmospheric and other conditions might aid their further conveyance from host to host.

These circumstances or influences from without might be considered accidental; but does not the cyclic history of various diseases gain support through this explanation of the behaviour of diseases of an epidemic character, of the description of influenza, plague, or epidemic infectious pneumonia? We know that in India, epidemic infectious pneumonia is frequently present in the North-Western frontier and Afghanistan, and that plague is present in an endemic form in the Kumaon Hills, so it only requires an accidental circumstance or influence for the conveyance of the disease to other parts of the country to cause it to assume larger and more serious proportions by further development. Typhoid fever in Europe, and in India, are almost distinct members of the same family, behaving differently in two different climates; while even typhoid or enteric in Europe has undergone changes within the last few years by a process of evolution.

Although the influenza epidemic swept over Europe and Asia so long ago as 1890, we have evidences of its presence to this day among us in most parts of the world.

Of late years there has been a strong leaning towards the theory, that within the human body are germs of various diseases (this was pointed out some years ago by Major J. Fayrer, R.A.M.C.) which await their opportunity to develop for an attack as soon as it is to their advantage, and these opportunities occur when the health runs down and the field is not sufficiently guarded by the "phagocytes" or sentries. Doubtless a law of the Creator's for the strict observance of the laws of Health; for the preservation of our life to the best advantage; and temperance in all things which we enjoy.

If such influences exist within, there must be influences without; whereby they gain entry within, for we have in the mosquito theory for malaria one of the outside circumstances or influences which convey the malarial poison to man through the mosquito. We also know that birds and animals have the parasites of malaria; why should not these influences, then, be prevailing in a similar manner in other diseases of an epidemic character? The lowest forms of animal or vegetable life are so closely connected, and, as it were merge into one another so intimately, that in the world of animal or vegetable germs of disease, one might fully expect that the animal germ, like the insect life around us, would feed upon the vegetable, and when an accidental circumstance or chance occurs, there is a wider field offered to the animal germ to procreate and live on such pabulum as pollen before entry into the human body. Moreover, if the pollen from one flower is capable of being carried by insects to another flower, and fecundating (thus producing varieties of form and colour), why should not the same law apply to the world of lowest animal life or germs, which create diseases akin to one another in some respects, producing similar symptoms, but yet bearing finer differences in others, according to the soil they germinate in?

If we believe in the theory of the evolution of man and the origin of species, and there is such a thing as the evolution of disease, then it is reasonable to accept it through some such explanation as the above in which the lowest, or humblest plant and animal life have a share.

Epidemic influenza, although it spread rapidly in India, did not reach all parts of the country at the same time; nor did its severer types of the second or third, or any other degree that there might be, travel so rapidly. It started, as I said before, in a mild degree, with very rapid strides through Europe and Asia, and the severer types came later on at intervals of a year or more, being observed in some places, perhaps, because of more accurate observation and vigilance; but unobserved, or, probably unknown, in others. At any rate, similar types of the disease were witnessed in Europe as well as in India subsequent to its first appearance in 1890. How were these types produced?

There must have been a further development or concentration of the poison to have produced such severer symptoms; and it almost seems as if Nature were preparing the human body for resisting further attacks by strengthening the various cultures by a

gradual process; and in consonance with Darwin's theory, the survival of the fittest is upheld by natural selection.

The behaviour of the poison and its rate of travelling, is largely influenced by local, climatic and meteorological conditions, and I believe it has not quite spent its full force yet. The poison has a greater chance of developing and spreading in a thoroughly dry climate, although it can find a suitable *habitat* in a moist one; but an excessively moist climate seems to retard its further development, and does not present such highly favourable conditions for its propagation. For instance, the dry plains of the Punjab, Sind, North-Western Provinces, and South Afghanistan, are places where the poison would travel rapidly and exist. These climates are extremes as regards temperature in the hot or cold seasons respectively, and have comparatively small rainfall; but the North-Western Provinces having a larger one than any of the others. Extreme heat and extreme cold might either kill, or hold the poison or germ in abeyance for a season; but as soon as favourable opportunities occur and the germ finds suitable pabulum, there is a recrudescence of the disease; a sandy or dusty soil being more suitable for its existence than a clayey one. I know I lay myself open to severe criticism when I say this, for the question might then be naturally asked, How about moist climates such as Bombay or Calcutta, and others with a clayey soil, and yet the disease has been present? True, but it is not the soil alone which offers suitable pabulum for germs to exist; the fine dust of old records and files, which are found in Government and commercial offices, serves to keep millions of germs alive, and they only await their opportunity for a dry season and for the records and files to be moved and dusted, for when stirred up you can witness the spread of the disease.

I recently saw a slight epidemic of this nature due to the old records being moved. As to the mode in which the poison enters the glandular system and strikes its roots deeper and deeper, it seems to me that the lymphatic system is the most natural portal by which it does so, and sets up severe morbid changes of a grave or dangerous character.

Whether influenza is a precursor of something more serious, such as plague; or is a form of disease which renders the body peculiarly susceptible to attacks where the plague germ is present, is a question which is indisputable if one reads the past history of such epidemics, and observes its behaviour in those attacked in our own times. It is, moreover, capable of setting up changes of a graver character when it gets a foothold, as mentioned in Dr. Bruce Low's cases, of which I certainly witnessed similar cases in India; and from its past history and from what we are at the present time witnessing in the East, it seems to me, there is a very strong link of connection.

Then, again, pneumonia when present during an influenza epidemic is always regarded as a serious complication—in fact, very serious in the aged, the infant or young child; whilst epidemic infectious pneumonia and pneumonic plague are dangerous to a degree, and very seldom does a case recover.

Dr. Hossack's group of influenza cases, which were found on the same floor of the house as where the plague cases were originally attacked, caused him to regard them at first as genuine plague, when case No. 1 (Seurani) and No. 4 (Sewgobin) died; and although he was doubtful for a time in his own mind as to their being actual plague, he was disposed to consider that they were, because of the plague deaths and the dead rats found in the same house. At the same time cases Nos. 2 and 3 (Ram Nath's wife and Phoolbasia) having recovered, which seemed hardly possible in Phoolbasia's case had it been pneumonic plague, caused Dr. Hossack to doubt whether these four cases could be plague, and he therefore considered them as influenza, but could not get away from the feeling that they might be plague. When in doubt play trumps; hence Dr. Hossack following this rule called them all plague cases.

Dr. Nield Cook's bacteriological examination from cultures made of Seurani's and Sewgobin's tissues, and also sub-cultures on agar and broth, did not confirm Dr. Hossack's opinion of these cases as plague, but pronounced them as influenza. Dr. Nield Cook also obtained no stalactite growths after inoculating flasks of peptone bouillon with oil floating on the surface, but got only a fluffy deposit at the bottom of the flasks, and he states that he believes from the cultural and microscopical appearances that they were the bacillus of influenza described by Pfeiffer, Kitasato, and Klein.

These cases of Dr. Hossack's clearly prove the difficulty of diagnosing cases of plague from influenza, especially when pneumonia is present and the patient still living; while the same difficulty is experienced in diagnosing influenza from plague, when glandular swellings are present in the former, as was the case in the father of the family who was attacked with influenza and enlarged inguinal glands as described in the *British Medical Journal*, page 89, June 8th, 1901.

Now, as to the bacteriology of these several diseases above mentioned, Crookshank in his work on bacteriology gives us an account of the bacillus of hæmorrhagic septicæmia in various birds and animals both wild and domesticated, and there is a very close resemblance between fowl cholera, plague, and hæmorrhagic septicæmia, as far as their respective bacilli are concerned.

Then, again, if we examine the *Bacterium pneumoniæ crouposæ* and Friedlander's pneumococcus, we will observe a very striking resemblance to the bacillus of hæmorrhagic septicæmia, both in their morphological characters as well as culture in nutrient gelatine, respectively. In Sternberg's micrococcus which he found in the blood of rabbits inoculated with saliva, there will also be observed a resemblance in morphological characters to the above-mentioned bacilli and pneumococci, which Pasteur has found also in the blood of rabbits inoculated with the blood of a child suffering from rabies.

Talamon found the same organism in pneumonic sputum which Sternberg identified; Netter found it in purulent meningitis; and Monti in cerebro-spinal meningitis; Weichselbaum found it in ulcerative endocarditis; whilst others have found it in acute abscesses of the middle ear and in purulent inflammation of joints after pneumonia, which points once again to septicæmia or hæmorrhagic septicæmia.

Sternberg's micrococcus has earned various names owing to the above facts; it is known as a "microbe de saline," "*Micrococcus pasteuri*," "lancet-shaped micrococcus," "*Streptococcus lanceolatus pasteuri*," "*Diplococcus pneumoniæ*," "*Bacillus septicus sputigenus*," "micrococcus of sputum septicæmia."

Sternberg concludes that this micrococcus is the cause of acute infectious pneumonia, but is associated with widely different pathological processes, and the possibility of its being a "saprophyte," which finds in pneumonia a suitable soil for its development, ought not, therefore, to be overlooked.

Klein also found a micrococcus in pneumonia sputum which does not differ from Sternberg's micrococcus, and in cover-glass preparations resembles Friedlander's coccus surrounded by a halo without a definite capsule. Their morphological characters bear a very close resemblance, and present forms intermediate between cocci and bacilli. Poels and Nolen isolated a micrococcus resembling Friedlander's pneumococcus in infectious pleuro-pneumonia, and inoculation in cattle produced a condition considered indicative of pleuro-pneumonia.

Arloing, again, isolated a bacillus in infectious pleuro-pneumonia which produced a more marked rise in temperature in animals suffering from pleuro-pneumonia than in healthy animals, and he provisionally named the micro-organism *Pneumo-bacillus liquefaciens bovis*, *Pneumococcus guttæ cerei*, *Pneumococcus lichenoides*, and *Pneumococcus flavescens*; they are composed of short rods; non-motile and with no spare formation observed in them. They liquefy rapidly in gelatine, form on potato a white layer which becomes brownish or greenish sometimes, and, according to Arloing, pure cultures produce in the ox when injected subcutaneously, or into the lung, the same lesions which are produced by virulent lymph. Guinea-pigs and rabbits are slightly susceptible, "dogs are immune."

If we now come to the question of influenza, we shall find that the disease is also highly infectious in its character and easily communicable from one person to another; it is characterised by catarrh of the respiratory tract and the gastric mucous membrane; is accompanied with great prostration and mental depression, and ends frequently with pneumonic complication. The gastric complication might be secondary to the respiratory, insomuch as many patients swallow their expectoration from the lungs which are charged with bacilli, and it finds, perhaps, in some cases a suitable nidus for further development in the alimentary tract.

The bacillus of influenza by cultivation shows filaments composed of long and short rods, cocci forms, and irregular filaments. It has been found by Canon in the blood, and by Pfeiffer in the purulent bronchial secretion. It has been transferred to monkeys through the nasal mucous membrane and symptoms similar to influenza were produced. Equine influenza, or "pink eye," has been observed to prevail with the influenza epidemics which have spread in man; but apparently there is a want of evidence on the point of intercommunicability or relation between the two diseases. If the aforesaid circumstances can be established with regard to man and the horse in epidemic infectious pneumonia, it would contribute to show that there is a strong connection—from an infective point of view—between man and the equine tribe; and there seems to be a far greater likelihood that the communication from the horse to man is more probable, than from man to the horse; and the conditions which were favourable in this particular outbreak among the 14th Bengal Lancers, as described above, together with that among the 23rd Pioneers, would tend to point strongly to favourable conditions in those men for germ-proliferation, since the disease was not at all severe in the men of the Bombay troops, who were either immune, or, in whom the conditions or the soil, were unfavourable through want of predisposing conditions (as will be observed from the disposition of the encampment and the animals present), together with other causes most probably.

Malarial fever, or the conditions favouring it, or some other cause, might be considered highly conducive to the development of the germ of epidemic infectious pneumonia; or it might become infectious to those strongly predisposed by such causes as might lower the system, as in the case of the 14th Bengal Lancers who were strongly built men.

If we notice the behaviour of the bacilli and cocci above mentioned, in hæmorrhagic septicæmia, pneumonia and influenza, there seems a very strong chain or link of communication clearly established between the lower animals and man; and the poison is carried from the former to the latter, under certain conditions. The bacterium, bacillus or coccus of pneumonia, which has been investigated by Friedlander, Sternberg, and other most eminent investigators, has been found in so many parts and systems of the human body, setting up so many pathological conditions, that it seems to be as ubiquitous in its changes of form, character, mode of attack, and action, as the influenza bacillus, which sets up so many different trains of symptoms affecting so many portions of the human frame, that it seems to have a multitude of portals of entrance, and to become a septic poison very rapidly.

Then, there is also a very important point to consider in the matter, namely; the temperament or mood of the patient, the poison selecting its point of vantage as regards this, and also the time for attacking the subject.

The points which are most vulnerable in epidemic influenza and infectious pneumonia, are the lungs. The disease germs seem, as it were, to prefer this channel of entrance, since it is in communication with the outer atmosphere, and the germs are doubtless äerobic. Given these conditions, then, its best and safest opportunity of attacking and destroying in its most suitable *habitat* has been attained, and thereby a further infective base or laboratory of culture, from a defence as well as a distribution point of view, by dissemination through the blood, is created, when it then exhibits the greatest activity and infectivity, and makes further invasions and conquests of the tissues, and other systems. If we regard rats as the conveyors of the germs of plague, these creatures, we know, have free access to our houses and stables; and wherever grain and cereals are to be found. The rat visits the stables in India, because of "grain" or the horse's food which lies in buckets and on the floor; and if equine

influenza or "pink eye" is present, the rats might become infected with this disease, and a pneumonic form might break out in them for various reasons, because they live in the roofs of houses where the atmosphere is heated and stuffy, and contains the germs in a concentrated or highly infectious form. If they do not live in the roofs of houses, they possibly live in holes in the walls or ground which are ill-ventilated and close; and by shutting out sunlight and air, there are conditions present in the dark, damp, and hot chamber which favour rapid and highly infectious germ proliferation. These creatures wander about the house in search of food, particularly at night; and drop their insect life and droppings wherever they go, and so distribute the disease in a very virulent and highly infectious form, almost allied to plague in its high degree of infectivity. The destruction of rats when such a disease is present is perhaps a very safe measure; but then, their holes and burrows, the roofs of a thatched dwelling, which contain their vermin, also require every attention, for, if a future invasion of the house by rats occurs, the germs are present there for future proliferation and development, and it seems, therefore, very necessary that such dwellings should be treated by a powerful disinfectant of a gaseous type; and the floors by fire with a view to destroy the germs. In the case of thatched roofs in India, which are not newly thatched every year, but are merely replenished with new thatch with the old, it seems a dangerous practice to allow the thatch to remain, and so the best plan, it seems to me, is destruction by fire, or thorough disinfection for some forty-eight hours or more with a pungent and gaseous disinfectant efficiently carried out, such as sulphurous fumes (by burning a quantity of sulphur, while every opening and cranny is closed or sealed up during the process). For the destruction of rats thoroughly and efficiently, which would then entail burning the thatch of the roof, there is no surer and better rat-catcher or hunter, than a "mongoose," which should be tamed and well fed and cared for. This animal is about the most useful for hunting out rats and snakes in a house, for it can penetrate every nook and opening; is fearless; and takes the greatest delight in its pursuit.

The rat, then, might transfer a highly infective form of the disease to man, which enters the lungs and assumes a very virulent type of disease in the sense of a septicæmia, through purulent changes which might create metastatic abscesses which infect the whole system through the glandular and lymphatic channels of the body.

The gastric form of influenza might also be one of the roads through which the abdominal glands share in a mild degree at first in such changes by the channel above given, namely; swallowing infected sputa.

It is a very curious fact, that epidemic infectious pneumonia has been mistaken by some observers in its symptoms for cerebro-spinal meningitis. The fact of the bacillus or coccus of acute infectious pneumonia (as Sternberg declares the micrococcus to be); whilst Monti found it in cerebro-spinal meningitis; Netter in purulent meningitis; and others in various affections as before mentioned, points strongly to what I maintain, that there is a strong link or connection in this infection, which would be lost or unnoticed by some, unless very carefully kept in view in its various stages; but which epidemic infectious pneumonia and influenza seem to me to establish, both from the history of influenza, of pneumonia of an epidemic type and of plague, and the manner also in which various symptoms occur which cause them to be confused with other diseases. But whether influenza, epidemic infectious pneumonia or plague, the most serious and vital point of attack in the human subject is through the respiratory system, giving rise to a highly fatal and almost malignant type of pneumonia which is equally dangerous in all three; and the ultimate termination of which is usually septicæmic changes and pneumonic plague.

Natal.

REPORT OF THE HEALTH OFFICER FOR THE YEAR 1904.

The Health Officer for the Colony, Ernest Hill, M.R.C.S., L.R.C.P., D.P.H., in his carefully-prepared report, states that: (1) the European population of Natal numbers 101,183; (2) the total European births amounted to 31·19 per 1,000, and the total deaths to 10·89 per 1,000 living per annum; (3) A small-pox outbreak resulted in 1,238 cases and 361 lives; 23 of the fatal cases being amongst Europeans. The natives are willing to be vaccinated, but the vaccination of Europeans had been allowed to fall entirely into abeyance, and generally the application of the measure amongst natives and immigrants alike had been fitful. The colony of Natal has, as usual, suffered the consequences of neglecting vaccination. (4) Plague, which in 1903 attacked 208 persons, in 1904 attacked 18 persons only, of whom 13 died; Durban was the chief centre of the disease. (5) Enteric fever in 1903 attacked 919 persons, of whom 84 died; whilst in 1904 the number of cases amounted to only 516 with 58 deaths, a case reduction of 44 per cent. and a mortality reduction of 37 per cent. (6) Cases of dysentery and diarrhœas fell from 206 in 1903 to 164 in 1904, a reduction of 20 per cent. (7) Syphilis is spreading to a serious extent amongst the native population. (8) Infectious diseases notified amongst Europeans amounted to 1,074 against 1,184 in 1903. The principal diseases however, pneumonia and phthisis 199 cases, were included in the 1904 return, so that the fall is more pronounced than would at first appear.

"Edinburgh Medical Journal," July, 1905.

In notes on tropical diseases Marshall after stating the generally accepted idea of the relation of trypanosomiasis to sleeping sickness, refers to Plummer's objections to the theory. Plummer holds that trypanosomiasis and sleeping sickness are distinct ailments, that the organisms of each are distinctly different when grown in the same animal, and that all cases of trypanosomiasis followed by sleeping sickness are due to a double infection.

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THE

Journal of Tropical Medicine

OCTOBER 16, 1905.

THE LONDON SCHOOL OF TROPICAL MEDICINE—INAUGURAL ADDRESS AND DINNER.

DR. NUTTALL delivered his inaugural address before a large audience in the lecture theatre of the School of Tropical Medicine on Wednesday, October 11th. We print the text of his excellent address elsewhere in this issue, and we are certain that those who read Dr. Nuttall's discourse will enjoy it almost as much as the appreciative audience who listened to him. Sir A. Maloney, K.C.M.G., occupied the chair, and in the course of his remarks drew an instructive and useful picture of life in the Tropics, and stated simple and effective methods of preserving health in warm climates. His advice was temperance in all things, exercise in moderation, and the cultivation of a contented mind.

The entries at the school for this season numbered 38 at the date of the inaugural address.

SCHOOL DINNER.

Under the presidency of Sir Ralph Moor, K.C.M.G., a large assembly sat down to dinner at the Gaiety Restaurant on the evening of October 11th. The chairman's immediate right was occupied by Dr. Nuttall, the "orator" of the day, and on his left Sir Alfred Jones, K.C.M.G. Amongst others present were Mr. H. G. Read, of the Colonial Office, Sir A. Maloney, K.C.M.G., Sir Francis Lovell, C.M.G., J. M. Atkinson, Principal Medical Officer, Hong Kong. The Seamen's Hospital Society was represented by Mr. Percival A. Nairne, the Chairman of the Committee of Management, and Commander George Hodgkinson, R.N. The staff of the hospitals of the Society and the lecturers of the School were well represented, and many medical officers in the colonial service who had gone through the course of instruction at the School were present.

The Chairman, after the loyal toast, gave "The London School of Tropical Medicine and its students," coupling the name of Sir Patrick Manson, K.C.M.G., with the toast. The speakers to both the proposal and the reply dwelt upon the necessity for ample financial support being given to the Schools of Tropical Medicine. The work they were doing had received recognition and appreciation on every hand, and seeing that the foundation of a School of Tropical Medicine was no longer an experiment but a question of established success and of proved imperial necessity, the duty of the country and of the Government is to see that the work is not hampered or in any way retarded by want of the comparatively insignificant sums required.

Sir Patrick drew especial attention to the public spirited manner in which the committee of the Seamen's Hospital Society had come forward in establishing the School.

Professor Hewlett proposed "Tropical Medicine and Hygiene, coupled with the name of Professor Nuttall, the orator of the day." Professor Hewlett, after paying a just tribute to the excellence of Dr. Nuttall's address, said that, considering the number of subjects dealt with during the course now prescribed by the London School of Tropical Medicine, and the rapid accumula-

tion of new facts in connection with tropical pathology, the question of extending the course beyond its present limits would soon have to be entertained. Professor Nuttall acknowledged the compliments paid him, and in a witty speech referred to the many developments of surgical and medical tropical work.

Sir Alfred Jones, K.C.M.G., in earnest and eloquent terms, proposed the toast of "The Tropical Colonies." He impressed upon those present the close connection between the scientific aspects of dealing with disease and the necessities of commerce. Civilisation in the dark places of the world meant commerce, but commerce was impossible in places where white men cannot live. He had, therefore, seen it his duty to support the Schools of Tropical Medicine in Liverpool and London, and he was more convinced than ever as to the necessity for those schools and of the duty of the country to further their development.

Sir A. Maloney, K.C.M.G., acknowledged the toast of "The Colonies," and stated that he had found the local governments in the Colonies and the Colonial Government at home equally anxious and willing to assist the Schools of Tropical Medicine in every way; that they had already done much to help investigation of tropical diseases, and he believed it was their intention, so long as the schools continued to advance in the way they have, to still further recognise their usefulness.

Sir Francis Lowell, C.M.G., in proposing the toast of "The Chairman," referred to the good work he had accomplished in Northern Nigeria, to his reputation as an administrator and to the cordiality with which he maintained relations with those who worked with him. Sir Francis also referred to the devotion with which Sir Ralph Moor worked as honorary secretary in connection with the dinner over which Mr. Chamberlain presided a few months ago. It was largely owing to Sir Ralph Moor that the dinner was the financial success it proved to be.

Sir Ralph Moor in reply mentioned, as did all the speakers, the whole-hearted devotedness Mr. P. Michelli, the secretary, had given to the School ever since its establishment.

Announcement.

THE QUARTERLY JOURNAL OF TROPICAL VETERINARY SCIENCE.

For many years past it has been felt that there existed a distinct want for a scientific publication dealing with veterinary pathology in the Tropics.

With a view to filling this gap in veterinary literature, certain officers of the Indian Civil Veterinary Department have undertaken the publication of a quarterly periodical to be called "The Journal of Tropical Veterinary Science."

Though emanating from India, it is hoped that its sphere of utility will not be limited to that country, but that veterinary and scientific workers in the comparative field throughout the world, whose researches bear in any way on the diseases of stock, and the relationship of these diseases to the pathological conditions in man, met with in the Tropics and colonial possessions, will support the publication by their contributions.

Each number will, as far as possible, consist of original articles of scientific interest, with the exception of such pages given up to reviews and extracts from current literature as may appear to demand attention. Nothing of a personal or political nature will appear in the Journal. Amongst the subjects to be dealt with in the forthcoming numbers, for which arrangements have already been made, will be a series of articles on the Anatomy, Physiology, and Pathological conditions of the Camel and the Elephant; the intestinal and other parasites of animals; the biting Flies and the Ticks of India, together with their importance in the transmission of disease.

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Principal, Lahore Veterinary College.

F. S. H. Baldrey, F.R.C.V.S., F.R.G.S., Capt., C.V.D.,
Professor of Sanitary Science, Punjab Veterinary College.

R. E. Montgomery, M.R.C.V.S., I.C.V.D.,
Assistant Imperial Bacteriologist, Imperial Bacteriological Laboratory, Muktesar, U.P.

Lahore,
September 7th, 1905.

We have much pleasure in announcing the contemplated issue of a journal devoted to veterinary pathology in the Tropics. In this great field of scientific enquiry there is much not only to interest medical men, but a great deal it is imperative for them

to know in the light of the distinct and intimate bearing the diseases of animals bear to those of men. We wish the editors and publishers the success a journal devoted to so useful a subject so richly deserves.

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New Drugs.

UNITED STATES PHARMACOPŒIA, EIGHTH DECENNIAL REVISION.

Mr. Harrison Martindale, Ph.D., of Messrs. Martindale, 10, New Cavendish Street, London, W., has issued a most useful synopsis of the principal changes in the U.S. Pharmacopœia, and compared them with the British Pharmacopœia. The new edition of the U.S. Pharmacopœia is to take effect from September, 1905. No less than 117 articles are added to the new Pharmacopœia, whilst 151 articles are omitted. Several drugs and their preparation, are now standardised; these include aconite, belladonna, coca, colchicum, conium, guarana, hydrastis, hyoscyamus, ipecacuanha, pancreatin, physostigma, pilocarpin, stramonium, and the essential oils. The "heroic" medicaments have been altered in strength so as to coincide with British and other pharmacopœial formulæ. Many other alterations and additions have been made, and serum antidiphthericum and organotherapy receive due attention.

We have to thank Dr. Martindale for the great amount of time, trouble, and close study he must have devoted to the excellent synopsis which he has drawn up. The synopsis ought to be in the hands of every practitioner in the East and West Indies, as travellers taking medicines from U.S. prescriptions are plentiful, and insist upon the drugs being made according to U.S. requirements. The pamphlet is published by H. K. Lewis, 136, Gower Street, London, W.C., and costs 2s. 1d., post free.

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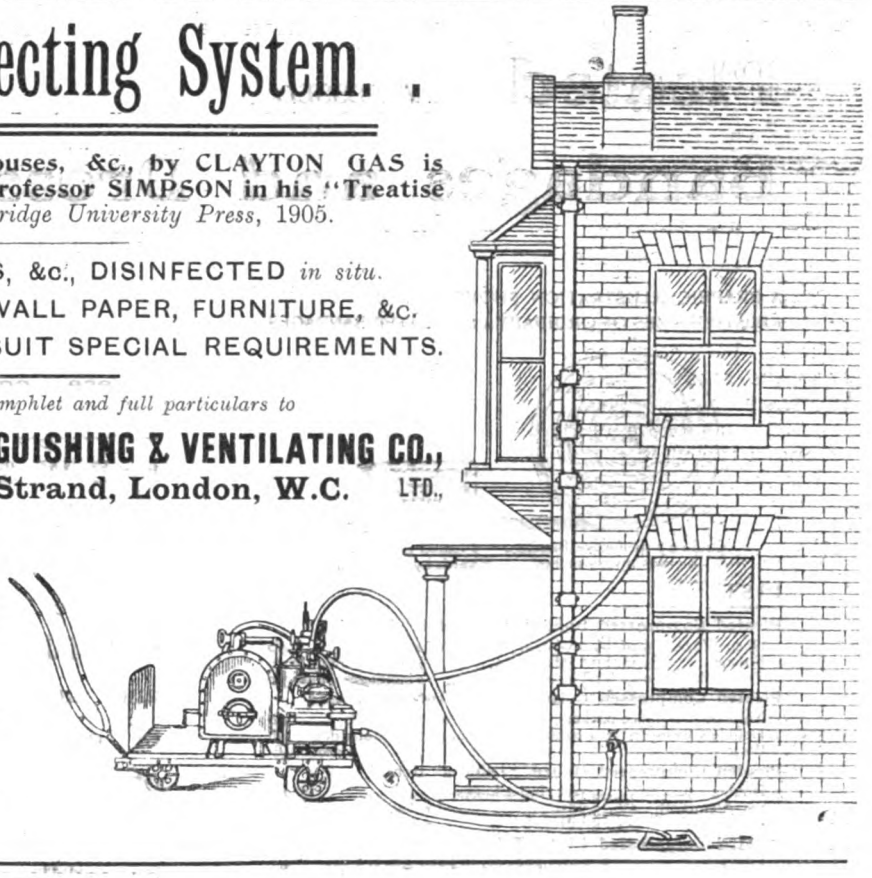
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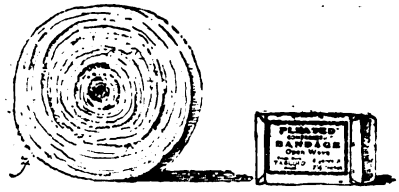
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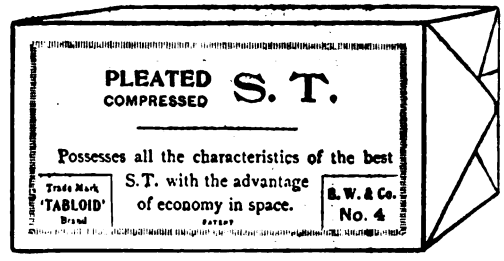
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[For London School of Tropical Medicine, see page vii.]

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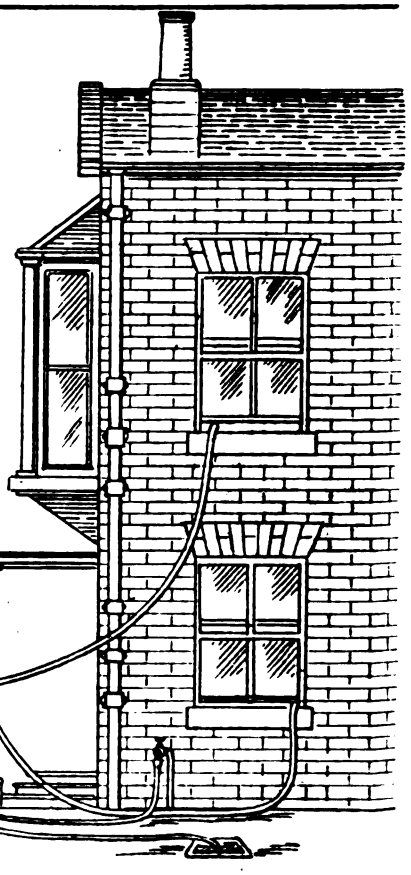
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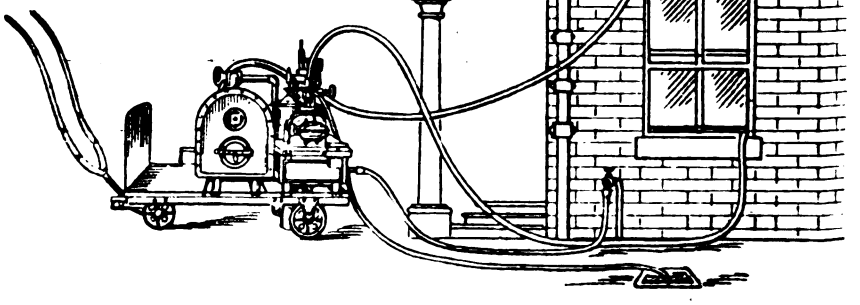


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BY

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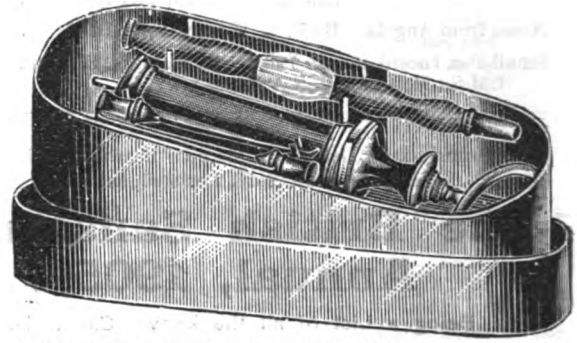
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FURTHER NOTE ON A FORM OF MALARIAL PARASITE FOUND IN AND AROUND JERUSALEM.

By J. Cropper, M.A., M.D., B.C.
Ramallah, Palestine.

On consideration I feel that a better title would be "Further note on certain bodies found in the blood of certain cases presumably malarial" (N.B., the mononuclear count as shown later is absolutely characteristic).

On analysing the notes of my first 500 cases in which a positive examination of the blood was made, I have arrived at the following result, which is very different to that which I expected, or in fact desired at the outset. No less than 343, or 68 per cent., were cases of pure infection with the above (double infections are excluded); 162 were in children under five years, and 48 under one year.

Excluding cases from the city of Jerusalem itself, only one case under five years was found to have tertian, quartan, or subtertian parasites in the blood, and in this case the mother of the child has been long under treatment for recurrent attacks of quartan fever in which parasites can always be found.

The full importance of the above being grasped, it is plain that making all allowance for possible error, endemic malaria of the ordinary type is practically unknown under five years in this village of 5,000 people and the district around, and yet enlarged spleen, advanced anæmia with most typical differential leucocyte count (always over 20 per cent. in apyrexia) is very common, and many children have been observed for months on end.[1]

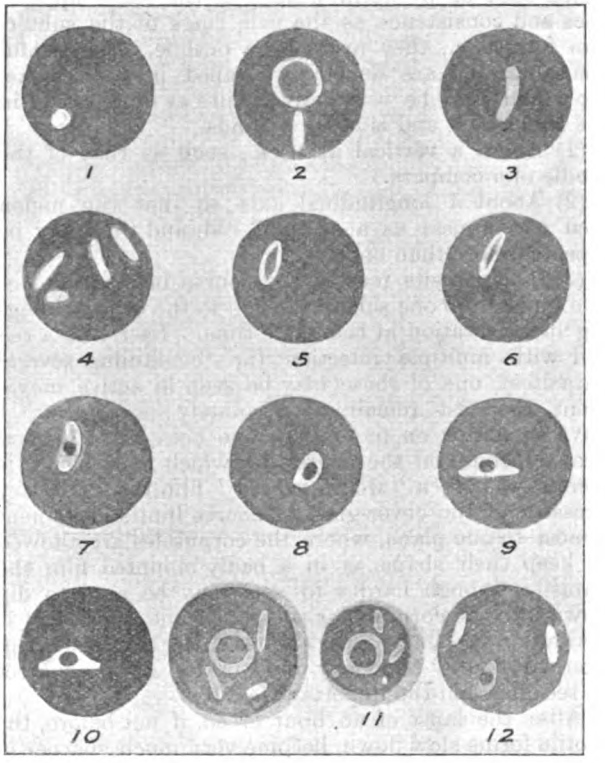
Turning to the record of cases from Jerusalem, I find that among a much smaller number examined, four children under one year, from 2½ months upwards, have been found to show the tertian parasite. It might be possible to raise the objection to this that these cases had already had quinine, but this is absurd, for quinine is much more easily obtained in the city, is rarely given free in the country, and is quite unobtainable in most of the villages from which these children come.

Illness Resembles Ponos.

There can be no question of "chronic" malaria in the children (48 in number) under one year old, and a child 20 days old has hardly time to develop into a "chronic febricitant." This is the youngest patient seen so far, but the spleen was considerably enlarged, there were motile forms in the blood, with characteristic large mononuclear count, and death on the twenty-second day. Syphilis in this case could be absolutely excluded; rickets in a marked form is rare in the country districts, and I have seldom seen congenital syphilis here, the disease being comparatively rare in adults. I do not here refer to the city. A mere catalogue of the symptoms exactly agrees with that of those found in Ponos, a disease of children, found in certain Greek islands (Spezzia and Hydra), where malaria is said to be absent.

Syrian Fever.

So far as I have been able to ascertain, medical men practising in this country have been long of the opinion that there is (chiefly, of course, from clinical evidence) a fever sometimes called Syrian fever, very resistant to quinine, but in the end amenable to it, especially prevalent among children, causing splenic enlargement, and often great debility, extreme anæmia, and at times death; this I believe to be due almost entirely to the form I have described. I have not yet found a case of tertian, quartan, or subtertian malarial fever that did not yield within a few days to adequate doses of quinine, and this appears



Figs. 1–4. Non-motile forms.
,, 5—8. The same parasite [motile] drawn at intervals.
,, 9—10. Showing similar stages, but 10 stained deeper.
,, 11 (double figure). Non-motile and showing "Brassy" body.
,, 12. Smallest form of "eye" form.

to be the experience of the Italians, Marchiafava, and Bignami, and of Dr. Osler ("Practice of Medicine"); but in this country I have seen many cases of malaria in hospital and out of it, in which this could not be said. The only reason why quinine has not been made more extensive use of is, that not being constantly on the spot, it was not possible in all cases to do so.

In the absence of definite staining reaction, it behoves us to be careful of dogmatic statements, but I have examined many cases of enteric fever, simple

[1] It is to be distinctly understood that this form is common enough in Jerusalem itself, as well as the classical forms.

anæmia, and other diseases too numerous to mention, as well as of persons in good health, and in none of these where a history of malaria could be reasonably excluded have I ever been able to find any of the forms which are so common otherwise.

Furthermore, most cases of tertian and quartan fever are quite free of such forms, even when the infection is severe, and this fact I am constantly verifying: the condition, too, is not one of poikilocytosis, which may, of course, be present in casse of cachexia.

Note on Motile Forms.—In over 50 cases I have now carefully observed these: they are by no means always seen, and rarely in cases where fever is about or after quinine has been given.

On further study of the subject I find that in the freshly drawn blood these, especially in warm weather, are in every particular, except their shape, which is melon seed or pyriform, exactly of the same appearance and consistence as the pale rings of the subtertian form, *i.e.*, they are soft in outline, need careful focussing, and are delicately shaped in the centre. Movement may be very active, quite as much so as in the subtertian, and is of three kinds:—

(1) About a vertical axis, *i.e.*, such as that of the needle of a compass.

(2) About a longitudinal axis so that the melon seed may appear as a straight rod, and this may be repeated more than once.

(3) The parasite may in the course of a minute or two move from one side of the cell to the other, changing its orientation at the same time. Lastly, in a red cell with multiple infection (*i.e.*, containing several parasites), one of these may be seen in active movement, the rest remaining absolutely motionless. I have seen this on more than one occasion. A good deal depends on the degree to which the blood is compressed, in a "well-mounted" film the necessary pressure of the cover-glass of course limits movement almost to one plane, where the corpuscles are allowed to keep their shape, as in a badly mounted film the parasite, though harder to see, may be seen to dip down into the corpuscular substance and movement is perhaps more active. In any case, the above description will readily allow any one working at the subject to recognise all the important features.

After the lapse of an hour or so, if not before, the motile forms slow down, become very much sharper in outline, blunter at the ends and somewhat smaller, in fact, forming what Sir Patrick Manson calls the "eye" forms, from their resemblance to the eye of Egyptian hieroglyphics, the pupil of the eye being represented by a very definite dot of hæmoglobin.

I have shown the above to seven or eight medical men, most of whom were quite familiar with malarial blood, and to others, none of whom had any difficulty in making out the movement described as perfectly definite and never before seen by them.

As already mentioned in most infections with tertian, quartan and subtertian parasites, this form is not seen, though cases of double infection, of course, are seen; the same is even more true of enteric fever, in the blood of which I have only once seen this form. I have also seen it in a case of phthisis.

Differential Leucocyte Count.—I have made this in over 15 cases, but, as still more remains to be done in this direction, I will only say that in well-marked cases during apyrexia the count works out in the most typical way possible. I have not depended on a count of less than 500-600, and in some cases 1,000. In a child of 20 days old, so numerous were the large mononuclears that they seemed to have changed place with the polymorphonuclears: in no other case has the percentage reached such a high figure as 70 per cent.

I have also made the leucocyte count in cases of ascaris and tænia, to see if they could be readily diagnosed by eosinophilia, but my experience leads me to believe that unless present in extraordinary numbers the eosinophiles are only very slightly increased, if at all, say to 4 per cent. As in other hot countries, the above are of course common enough. No doubt sometimes ascaris gives rise to definite febrile attacks, but in many cases I have given santonin without any lowering of the temperature, even when worms have been passed. Quinine was withheld purposely, but the fever yielded to adequate doses. In any case, breast-fed infants of a few months old rarely harbour these parasites.

Geographical Distribution.—Since my last "note" I have ascertained that this form is also readily found in Gaza, 40 miles south of Jaffa, in cases untreated by quinine, in whose blood neither tertian, quartan, nor subtertian parasites could be found in fresh or stained films. One of these was a boy who had for long been an in-patient at the hospital there for another ailment. I certainly saw the form at Banias, in the extreme north, in 1900, so that it is widely distributed in this country, and very likely far beyond it—a matter for future research. The majority of the villages from which I have patients lie at an altitude of 2,000 to 3,000 feet above sea-level, and judging by that of Jerusalem have probably an annual mean temperature of 60° to 65° F.

Seasonal Variation.—Though more abundant in the autumn, this form seems almost equally common in the winter and spring months, when the classical forms of malaria are very seldom seen in this country.

Pigmented Leucocytes.—In five or six cases these are noted. I should not regard this of much importance, apart from the fact that the most striking case of which I have notes, a child of 11 months, frequently under observation and living close at hand, showed, the day after the temperature had risen to 105·6°, very numerous and well-marked pigmented leucocytes: the spleen is still enlarged, and he has lately had another attack.

I attach great importance to the systematic and, if possible, periodical examination of the blood, and to carefully watching the action of quinine. One such case is worth a hundred patients examined on only one occasion, especially where one can control the treatment and observe its effect.

Reasons for regarding this Parasite as Malarial.—Neither the type of fever, which varies greatly, nor the presence of pigmented leucocytes is sufficient to establish this point, nor is the splenomegaly. In the present state of our knowledge the characteristic differential leucocyte count must remain as the most satisfactory evidence which we possess. As I have shown above, one could hardly wish this count to be more marked.

Addendum.—Since writing the above I have had the advantage of the help of a medical friend (at his own request I do not quote his name), who has had considerable experience in blood work, and is perfectly familiar with modern methods, to whom I have been able to show several children of 6 months' old and upwards, all having the characteristic aspect, splenic enlargement, and the above form in abundance. In one case the count of red cells was 1,200,000 per count, and the differential leucocyte count 30 per cent. of large mononuclears. The fever was typical.

In one of these cases he was able with ease to observe the characteristic movement I have described, as something certainly not seen in ordinary blood, and not hitherto seen by him.

Ramallah, Jerusalem,
September 16th, 1905.

Dear Sir,—Just a line to say that we have been favoured with a visit from Professor A. Macalister, of Cambridge, who has been kind enough to examine my slides and to check my cases. He observed movement in one well-marked case in which I had recorded the same six months ago. He offered (unasked) to sign a brief statement of his remarks, which I dotted down at the time, and he particularly endorsed the "compass."

(1) Needle movement through 45°.

(2) Greater refractibility of one end, which end moves more than the other.

(3) The movement in a plane at right angles to that of the slide, so that the parasite dips down into the corpuscular substance.

(4) The movement is not amœboid; the edges of the parasite remain "hard and firm."

He also, said "Movement is perfectly satisfactory. I have not the least doubt about it."

He also agreed that the numerous rods I showed him were in no sense vacuoles or artifacts, but genuine bodies, the slides being free from dirt or vacuoles of any kind.

The friend mentioned in my last paper has seen movement on seven occasions. If you know Professor Greenfield, of Edinburgh, he will tell you of his (J. Craw's) abilities; but I think Professor Macalister's name is of sufficient weight.

Yours, &c.,
J. CROPPER.

CANCER IN THE GILBERT ISLANDS.

By ALEXANDER ROBERTSON, M.B., C.M.

Medical Officer Gilbert and Ellice Islands Protectorate.

IN connection with the reference in the Editorial of March 1st of the JOURNAL OF TROPICAL MEDICINE to the statements of several observers of the scarcity of cancer in the Pacific Islands, I append notes of three cases of malignant disease which have occurred in my practice at Tarawa since my appointment to Medical Officer to the Protectorate in February of this year.

Neitekaton, female, 34, married, no children, Tarawa, Gilbert Islands. Admitted on account of tumour of right breast of fifteen months' duration.

Inspection shows retraction of right nipple and a puckering of the skin 1½ ins. above and to the axillary side of nipple.

On palpation a hard tumour about the size of a cricket ball is detected; it is freely movable on the pectoral muscle, but adherent to the skin at the pucker above mentioned. There is also a mass of enlarged glands under the border of the pectoralis major.

Under chloroform the breast, axillary glands and the fascia covering the pectoralis major and the upper third of the external oblique muscle were removed.

The wound healed by first intention and the patient was walking about in a week. Microscopic section of the tumour showed a typical scirrhous cancer of the breast.

As far as can be ascertained, there is no tendency to malignant disease among her relations.

Neiatuata, female, 28, married, two children, Tarawa, Gilbert Islands.

Admitted on account of tumour of abdomen of two years' duration.

Patient is emaciated and anæmic.

On palpation a hard nodular mass, 4 ins. by 3 ins., is felt in the left iliac region; it is firmly adherent to the pelvis, and is apparently continuous with the uterus.

Under chloroform a vaginal examination was made. There was ulceration of the anterior and posterior walls of the vagina. Blood and pus issued from both urethral and anal orifices. The cervix uteri was replaced by a large fungating mass, the so-called cauliflower excrescence. The uterus was enlarged and fixed, and the left broad ligament infiltrated with a hard mass; the right broad ligament to a less extent. The mesenteric and sacral glands were enlarged, masses of enlarged glands were felt in the omentum.

As the case was obviously hopeless, no operative procedure was attempted, and palliative measures, *e.g.*, antiseptic douching and a sedative mixture, prescribed.

Terrigemau, male, 55, Tarawa, Gilbert Islands.

Admitted on account of ulceration of lower lip and left cheek.

Examination shows extensive ulceration of lower lip, commencing from a point slightly to the left of the middle line and extending to the angle of the mouth. The buccal mucous membrane is also affected, and the left side of the tongue which is indented by the edges of carious teeth. There is slight enlargement of the left submaxillary gland. The discharge from the ulcer is very offensive. The subjacent tissues are indurated.

Patient states that the disease began as a small sore on his lip about two years ago. He is a constant smoker, and uses a pipe with a broken stem about 1½ ins. long. As there was a possibility of the disease being of a syphilitic character, he was put on large doses of hydrarg. perchlor. and pot. iod. for two months, but no improvement whatever resulted. He would not consent to any operative interference beyond the extraction of the carious teeth. I have since heard that the disease has

advanced rapidly, the cervical glands being now involved.

The population of Tarawa is 2,800. Whether malignant disease is prevalent or not in the other islands of the group I am unable to say, as at present I am without any facilities for visiting them. I hope, however, as soon as the medical department is provided with a vessel, to furnish information on the subject.

Since writing the above another case of carcinoma uteri has been admitted into Tarawa hospital.

Neikotanei, female, 40, married, Tarawa. Admitted on account of bleeding from vagina.

History.—For the last 18 months there has been pain in the uterus and discharge of blood, which of late has increased in amount. There has been loss of flesh for the last year.

Present state.—Patient is emaciated. Heart and lungs normal.

Abdomen.—Palpation shows a hard irregular mass in uterine region. The pelvic glands are enlarged.

Examination under chloroform.

There is an offensive bloody discharge from vagina, the anterior surface of which is ulcerated. The cervix uteri is enlarged and irregular in shape, the cervical tissue being very friable, tearing and bleeding freely when the Volsellum forceps are applied. The uterus is enlarged, nodular and fixed. Both broad ligaments are infiltrated. Portions of the cervical tissue were removed for microscopic examination, and the vagina packed with iodoform gauze.

Section of tissue showed carcinoma uteri.

At a recent visit of H.M.S. *Torch*, Staff-Surgeon Eames gave me permission to mention two cases of malignant disease he had seen lately in the Pacific Islands, viz., a case of epithelioma of the lip in Ocean Island, and one of carcinoma of the breast in the Union Islands.

A CASE OF TERTIARY SYPHILIS OBSCURED BY TYPHOID SEQUELÆ.

By William Hartigan, M.D., D.P.H.

In old days a very virulent type of syphilis was prevalent in Japan, rupial ulceration, gangrenous sloughing and nerve implication being by no means uncommon. The disease is still widespread, but the form is milder, though still dangerous (one of the worst cases I have seen, which eventually proved fatal, resulted from the insane fashion of "tatooing"); that it is also an insidious foe the following case illustrates.

A European male resident of Japan, aged 25, consulted me in June last. He had typhoid of a moderately severe type in September, 1897; recovery was slow and unsatisfactory. In December periostitis of right tibia, with phlebitis of the right saphena, supervened. The general health being indifferent, patient was advised to return to England. He there consulted an eminent tropical specialist, who found nothing radically wrong, and prescribed tonics, with some outward application for the leg.

On returning to Japan in 1898 the general health continued fair, but the tibia was still troublesome, eventually requiring operation on again coming home in May, 1900. Some necrosed bone was then removed by a well-known Manchester surgeon, the disease being pronounced a sequela of typhoid.

Patient went back to Japan and there suffered from phlebitis, was rather "nervous" with hysterical and choreic symptoms, constantly complained of bone-ache in chest, ribs and right arm, followed by ulceration, and culminating in necrosis of the junction of the manubrium and ribs, requiring operation, which was done in Tokio in 1904. An examination of blood and detritus was made, and the disease again assigned to the preceding typhoid. Whether simply Widal's reaction was present or a cultivation of typhoid bacilli made, I am unable to say, but the diagnosis was most emphatic.

The health still continued unsatisfactory and the ostitis progressed. In March, 1905, the right scapula near the acromion and the seventh rib required scraping, whilst six weeks later a portion of the ninth rib was excised, followed by removal of the appendix.

The patient has now the appearance of "the subject for an operative surgery examination," having seven operation scars on his body.

Being rather sceptical about the typhoid theory, I made firm pressure on the centre of the manubrium, well away from the site of operation, and caused considerable pain. Remembering the late Professor Tyrrell's (of Dublin) dictum "that such tenderness was almost positive evidence of syphilis or aneurism," my examination was directed accordingly.

There were no signs of aneurism; heart, lungs, liver, kidneys, all normal.

The patient had no recollection of having had any genital trouble, sores, or running, but acknowledged that he might have been exposed to infection in 1898 and 1899.

The throat was slightly injected; on the right tonsil was a scar, which might have been due to a serpiginous ulcer. When questioned patient recollected that he had some throat irritation, lasting for some weeks, about 1899, but he "did not bother about it."

He was positive there had been no rash since that of typhoid, which was general; the hair had not fallen out, but the growth was very poor.

There was considerable tenderness over the bones on which operations had been done, as well as over the upper two-thirds of the left ulna.

The testicles were small, rather hard, sensation absent.

The knee-jerk was exaggerated, other reflexes normal. There was much unsteadiness in walking and turning with the eyes shut, an inclination to drag the right toes and trip over uneven surfaces.

There has been considerable loss of weight, with a feeling of "slackness" and "not being up to much." Pulse 80, medium tension; temperature 99°; urine normal.

After consultation with Mr. Cantlie, we decided to try iodide of potassium in doses rapidly increased to 30 grs. *t.d.*, together with hydrarg. iod., gr. $\frac{1}{16}$.

The result was most satisfactory, though the patient was much alarmed by the almost immediate appearance of another very painful node on the sixth rib, which, however, quite disappeared in a month: the manubrium had then become much less tender, the ulna not painful at all.

The testicles were larger, softer and much more sensitive. On July 29th, symptoms of iodism being present, I substituted drachm doses, increased in three days to half-ounce doses (equal to 3½ gr. iodine) of syrup. hydriodic acid, which was well borne and quite as effective as the iodide.

By the middle of September everything was quite normal, patient looked in robust health, had gained more than a stone in weight, and said that "he had not felt as he did now for years."

The blood was tested in July for Widal's reaction with negative results, it was otherwise normal, with perhaps slight leucocytosis, but a blood count was not made.

The case is of interest, showing how an originally correct diagnosis led up to a wrong one, previous convictions obscuring the rather incomplete evidence of indefinite symptoms. The tibial necrosis, dating as it did from 1897, was almost certainly a sequela of typhoid; no "connection" having then taken place, specific disease is practically excluded. The later bone affections, particularly in the absence of any manifest indication of syphilis, were naturally assigned to the same cause. Their complete disappearance (having lasted for six years), which followed on a four months' anti-syphilitic treatment, almost certainly proves that their origin was specific. I had thought that Schaudinn's late discovery of the "*Spirochaete pallida* of syphilis" would have assisted in the diagnosis of such obscure cases, but Professor Mittall informs me it is not found in tertiary lesions.

Another point is the apparent absence of any sore. Any one with tropical experience knows what a frequent occurrence this is; probably because so many suffer from "dhobie itch" and "prickly heat," a slight ulcer or abrasion passes unnoticed. There is also the greatest difficulty in distinguishing *per se* between an infective and non-infective sore, for in the East "hard" and "soft" chancre, as we at home understand the expression, is quite a misnomer.

The syrup of hydriodic acid, much used in Canada and the States, deserves to be better known here.

In this case, by its use I was enabled to continue treatment with full doses at a critical stage, when the exhibition of the iodides of potassium or sodium would have had to be stopped altogether, or the dose greatly reduced.

NOTES FROM ANGOLA.

By F. C. Wellman, M.D.

Corresp. Memb. Am. Soc. Trop. Med., late M.O. Bihé Dist., Portuguese West Africa.

Prefatory Note.

The *raison d'etre* of these notes is twofold: (1) In the whole of this colony there is not a single observer (at least no English-speaking one) except the writer; (2) in the large district inhabited by the Umbundo-speaking Bantus, known as the Angola Highlands, there obtain, as the writer has shown, somewhat peculiar disease conditions due to these highlands being climatically (if metaphor be allowed) a lofty, cool, dry island, surrounded by a sea of tropical heat and moisture. The large number of new species, subspecies, and varieties, which have turned up in the writer's collection, of parasitic and otherwise noxious animals is therefore not a cause for surprise, and may eventually throw light on some aspects of the characteristic disease incidence. In the interests of tropical medicine and the geographical distribution of disease it would seem that such a region should not remain entirely unnoticed, and the following observations, dealing chiefly with this highland portion of the colony, are therefore published.

Note I.—On the Mosquitoes of Bihé.

Following are some of the common highland mosquitoes collected, with one exception, by the writer. Very brief remarks on their bionomics are added.

Anophelinæ.

Anopheles wellcomei, Theob. Sylvan, bold, bites both by day and night.

Myzomyia funesta, Giles. Breeds in clear water. Principal carrier of malaria in the district.

Pyretophorus austeni, Theob. (*sp. nov.*). Breeds in muddy pools. Domestic, but shy.

Myzorhynchus umbrosus, Theob. Sylvan.

Cellia pharœnsis, Theob. Nov.-Feb.

Cellia squamosa, Theob. Nov.-Mar.

Culicinæ.

Danielsia wellmani, Theob. (*sp. nov.*). Dec.-Mar.

Culex viridis, Theob. "Garden" mosquito.

Culex tæniorhynchoides, Giles (*sp. nov.*) Swamps.

Mansonia africana, Theob. Native kraals.

Note II.—"Owambe" (Climatic Buboes).

This common disease corresponds in most of its features to the descriptions of climatic buboes. I shall not here attempt to discuss its bacterial relation to plague. The following statements concerning its clinical features are made after having examined over one hundred cases.

(1) In about 70 per cent. of the cases some small injury to the foot, leg, or thigh of the affected side, or of the genitals, can be discovered or elicited from the history.

(2) In light-coloured natives the line of infection through the lymphatics may often be discerned in its course from the point where the epidermis is broken to the gland.

(3) Only a small fraction of the cases (less than 2 per cent.) go on to suppuration, even if untreated.

(4) Cultures from the pus of two cases both showed staphylcocci, but nothing resembling *B. pestis*.

Note III.—Report of an Epidemic of "Katumbu" (? "Pertussis").

This epidemic swept during the past eight months over a large portion of Bihé, Bailundo, and Andulo districts. Small children were usually affected, although youths and even adults were occasionally attacked. The symptoms were similar to those of whooping-cough at home. Many weakly children were carried off by it, some succumbing to simple exhaustion and others to intercurrent malarial attacks.

NOTE IV.—SOME THOUGHTS ON GOITRE.

Goitre is another of the common complaints in the district. Three facts concerning it seem to be obvious :

(1) It is confined to the highlands.

(2) It is, generally speaking, a woman's disease.

(3) It is very rarely exophthalmic (I have seen but one instance) or accompanied by other serious symptoms. I have sometimes seen cretinism (I have down in my notes one woman with an immense goitre, all of whose five children were cretins), but never any other form of myxœdema. Various theories may be held to account for its onset. Some of these are :—

(*a*) That it comes by worry, fits of anger, crying, jealously, &c. *This is the native notion also.*

(*b*) That it is due to malaria. This is exploded by the fact that in the surrounding lowlands, where malaria is much severer, goitre is unknown.

(*c*) That it is caused by residence on calcareous soil (the drinking water theory). This is certainly not the cause here, as there is no calcareous soil upon which to reside. Kaolin, however, is very widely distributed throughout the region, and may be found in most streams.

(*d*) That it is caused by the altitude and climbing.

(*e*) That it is due to carrying on the head. If this were the only cause it would be commoner among men than women, as the men are the travellers and carriers of heavy loads.

(*f*) That it comes through living near large streams.

(*g*) That it is caused by stooping at work.

(*h*) That it is brought about by female weaknesses. None of these last theories account for its absence from the lowland tribes with similar habits. The last reason can hardly be reconciled with its occurrence in men too. I am informed that the Angoni people in the highlands of East Africa, who resemble the Umbundos in many ways, are also very subject to goitre.

NOTE V.—SLEEPING SICKNESS IN ANGOLA.

In the interior of Central and Southern Angola there is a distinct line of demarcation between the sleeping sickness districts and the regions free from that scourge. This line is the Coanza River. From the north bank of the Coanza to the northern boundary of the colony sleeping sickness is endemic in many situations; while from the south bank to German South-west Africa it is not endemic, and, although one meets with occasional cases imported from the north, the disease does not spread nor attack the southern tribes. It is of great interest to note in this connection that north of the Coanza River the ordinary *Glossina palpalis*, Rob.-Des., is (so I am informed) the common tsetse-fly, while south of the Coanza the typical *G. palpalis* is not found, but its place is taken by a new subspecies (*G. palpalis wellmani*) recently described by Mr. Austen, which evidently is not a distributor of sleeping sickness. The exact relation between the geographical distribution of the disease and that of the two flies is a problem upon which I am at work.

NOTE VI.—THE AFRICAN POISON TEST.

As I have recently run across a case of such poisoning which resulted in death, I here outline the *modus operandi* of this extraordinary custom. The agents which are generally used in this region are obtained from two *Leguminosæ*, *i.e.*, bark of the Ombambu tree (*Erythrophlæum guinense*) and leaves of a bush called Okaiembe (*Jephrosi vogelu*), together with the rootlets of another bush belonging to the *Polygalaceæ* called by the natives Utata (*Securidaca longipedunculata*). All three are powerful poisons. These substances are dried, powdered with various others, placed in the bottom of a small gourd and carefully covered with the resinous exudation from the Ulemba tree (*Ficus psilopoga*). On top of this is poured an evil-smelling mixture of different harmless solutions. Over the surface of the liquid is sprinkled a light-coloured powder. The witch doctor, with many mystic incantations and flourishes, stirs the mess a couple of times with his finger, taking care not to touch the bottom. Then the fortunate party whom it is proposed to acquit drinks. The mixture is again stirred, scratching the resin at the bottom, and liberating the poisonous substances. After a few minutes of ceremonies and rites to gain time for the poison to thoroughly permeate the whole, the draught is once more stirred and the victim (who is always made to drink last) quaffs to his doom. Another method, similar in principle, is to have a skin bag with two compartments, one containing the poisonous powdered substances and the other an innocuous powder of the same colour, sprinkling these in turn over the top of an inert decoction.

Bailundo, Angola, August 15th, 1905.

SMALL-POX INOCULATION IN INDIA.

By Major G. H. FINK, I.M.S., M.R.C.S., L.S.A.(Lond.).

IT might be of some interest to learn the reasons why inoculation for small-pox prevails in a great many portions of India, particularly in Assam, Orissa and Chota-Nagpore in the Central Provinces, and the arguments for and against the practice. But the machinery for the eradication of this recognised evil is simple enough, if the wheels be allowed to move in the proper direction with the assistance of the authorities, in the light of our knowledge since the days of Jenner.

Small-pox is a disease which has existed from very remote times in India, and spreads from it to the West, creating great havoc in its onward march, if unchecked, in the case of great epidemics. We can understand why the Hindoos made their great offerings to "Mata Devi" (the goddess of Small-pox), and how, when they found through centuries of experience, that persons who became pitted with small-pox were protected from further invasion from that disease for a lifetime, that Mata Devi's gift was prized as the road to salvation from so terrible a scourge; and people thus courted an attack, and in seasons of mild epidemics, or, in sporadic cases took the virus and preserved it for their friends and others who were willing to be inoculated. By this practice, so heavy a mortality as in previous bad years, was, in a manner, kept off, and "Mata Devi"

THE

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SELECTIONS

FROM

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Colonial Medical Reports.—No. 13.—SOMALILAND.

Medical Report of the Somaliland Protectorate for the Year 1904.

By A. J. M. POGETY, M.D.

Senior Medical Officer.

General Health of the Districts.

In two of the large districts, namely, those of Berbera and Bulhas, a severe epidemic of small-pox has occurred. This epidemic has now practically ceased.

Meteorology.

The conditions in those parts of the Protectorate which were free from the above epidemic of small-pox show a generally favourable meteorological condition, with a slight increase of rainfall. For the Province:—

In 1903 this was 1·47 inches; in 1904, 3·29 inches

Population.

The total population of the Protectorate is given at 300,000. I am of opinion that the population from which patients are drawn does not much exceed 20,000 in all, accounted for more by the native independence of character than actual distance from European-managed hospitals.

Major Operations.

Of the eighteen major operations performed at the different hospitals, I think it is particularly gratifying to note that only one death occurred. The local conditions are certainly not unfavourable, therefore, to operative procedure under ordinary aseptic precautions.

Tabulation of Diseases.

I have endeavoured to amplify this table where advisable in the paragraphs which follow it, as the classification is, of course, a wide one, and is not altogether free from cases of doubtfully correct diagnosis.

Dysentery.

Of the very large number of these cases recorded in the returns, I have been unable to meet with a single case of true dysentery during the eight months I have been in the country, and though it doubtless does occur, the cases so recorded by the hospital assistants seem to have never been more severe than a mucous colitis, and in one case was confused with hæmorrhoids.

Malarial Fever.

Intermittent fever seems alone to be of frequent occurrence. It is attended by unusually high temperatures, and shows itself to be most markedly wanting in true periodicity in character. I hope to report before long on the types of anopheles mosquitoes met with locally, certain varieties not being numerous enough to easily secure specimens, causing the delay.

It is especially worthy of note that no cases of hæmoglobinuric fever are recorded.

New Growths.

No cases of malignant new growths are recorded. The non-malignant growths were:—

(1) Papilloma of the face.
(2) Myceloma of the foot.
(3) Lipomatous tumours.

Tubercle.

Some at least of the recorded cases are open to very considerable doubt, as no microscopic examination was made. The number of cases recorded seems to be gradually increasing, however.

Digestive System.

Caries of teeth and constipation are responsible for the bulk of the digestive system diseases.

Diseases of the Skin.

The large number of ulcers shown may be taken collectively to be the usual foul spreading ulcers met with on the ankle of badly-nourished natives over most parts of Africa, and are occasioned by dirt and carelessness in attending to slight abrasions.

RETURN OF DISEASES AND DEATHS IN 1904-1905, AT THE

Barbera, Bulhar, and Zaila Hospitals and Dispensaries.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	—	—	—
Anæmia	1	—	45
Anthrax	—	—	—
Beri-beri	—	—	—
Bharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	8	—	11
Cholera	—		—
Choleraic Diarrhœa	—	—	—
Congenital Malformation	—	—	—
Debility	12	1	70
Delirium Tremens	—	—	—
Dengue	—	—	—
Diabetes Mellitus	—	—	—
Diabetes Insipidus	—	—	—
Diphtheria	—	—	—
Dysentery	11	2	487
Enteric Fever	—	—	—
Erysipelas	—	—	—
Febricula	—	—	—
Filariasis	—	—	—
Gonorrhœa	9	—	190
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	—	—	2
Kala-Azar	—	—	—
Leprosy	—	—	—
(*a*) Nodular	—	—	—
(*b*) Anæsthetic	—	—	—
(*c*) Mixed	—	—	—
Malarial Fever—	—	—	—
(*a*) Intermittent—	1	—	92
Quotidian	1	—	92
Tertian	44	—	962
Quartan	3	—	3
Irregular		—	—
Type undiagnosed	—	—	—
(*b*) Remittent	1	1	9
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	—
Mumps	—	—	11
New Growths—			
Non-malignant	2	—	3
Malignant	—	—	—
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	—	—	—
Rheumatism	5	—	270
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	10	1	94
Septicæmia	—	—	—
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	2115	892	2159
Syphilis—			
(*a*) Primary	—	—	4
(*b*) Secondary	7	—	37
(*c*) Tertiary	1	—	1
(*d*) Congenital	—	—	—
Tetanus	—	—	—
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	7	—	21
(*b*) Tuberculosis of Glands	1	—	4
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones			
Other Tubercular Diseases	—	—	13
Varicella	—	—	—
Whooping Cough	—	—	2
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	5	1	89
Circulatory System—	—	—	7
(*a*) Valvular Disease of Heart	—	—	—
(*b*) Other Diseases	—	—	—
Digestive System—	—	—	—
(*a*) Diarrhœa	10	—	76
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	2
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	1	1	1
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	2	1	9
(*g*) Cirrhosis of Liver	—	—	—
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	2	—	747
Ear	—	—	122
Eye	4	—	310
Generative System—			
Male Organs	—	5	25
Female Organs	—		
Lymphatic System	6	—	31
Nervous System	6	1	110
Nose	—	—	—
Organs of Locomotion	17	1	22
Respiratory System	21	4	767
Skin—	—	—	—
(*a*) Scabies	1	—	74
(*b*) Ringworm	—	—	126
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	—	—	—
(*f*) Other Diseases	101	3	11679
Urinary System	1	—	5
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	28	—	508
Parasites—	—	—	—
Ascaris lumbricoides	—	—	11
Oxyuris vermicularis	—	—	3
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	2
Other Poisons	—	—	—
Surgical Operations—			
Amputations, Major	18	1	18
,, Minor	—	—	313
Other Operations	—	—	—
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

Parasitic Diseases.

These diseases seem to be unusually rare on the coast, at least for a tropical region.

Boils.

During portions of the year boils are met with in more or less epidemic form, chiefly during the hot season, when much fine sand is carried in the air by the wind.

Diseases Affected by Occupation.

No special race or occupation disease is noted, except that of ringworm, which is frequent among the Soudanese pearl fishers and boatmen.

The following diseases, of special interest with regard to their distribution in tropical medicine, have not been met with :—

General Diseases.

Anthrax, hydrophobia, cholera, enteric fever, dengue, cerebro-spinal fever, rheumatic fever, beri-beri, lethargy, siriasis.

Diseases of the Blood.

Filariasis (F. nocturna or F. ozzar di).
Trypanosomiasis (Glossina papalis. G. morsitans).
Eosinophalia (of Flavia of ankylostomiasis).

Diseases of Urinary System.

Bilharzia. (In this I would beg to correct Mr. Sandwich, *Practitioner*, Oct, 1904.)

Diseases recognised by examination of fæces :—

Ankylostomiasis, Tricocephalus dispar, Anguillula intestinale, oxyurus, Vermicularis tænia, sprue.

Diseases of the Skin.

Leprosy, yaws, Dermatobia noxiatus. Congo floor maggot (or the fly Auchmeromyia luteola).

Local Affections.

Liver abscess, ainhum, goitre, guinea worm, chigger (jigger), ground itch.

No. 14.—WINDWARD ISLANDS, ST. VINCENT.

Medical Report on the Windward Islands, St. Vincent, for the Year 1904.

By C. W. BRANCH, M.D.,

Medical Officer, Kingstown District.

Colony Hospital.

(1) During the year there were 697 admissions, making, with those remaining from the previous year, 748 cases treated. This is far lower than the totals for the two previous years. It is not easy to explain this difference.

On the whole the population was healthier, no doubt, during 1904-5, but there were also admissions for uncinariasis. The labourers in the neighbourhood of the town have been, perhaps, to a great extent cleared of this parasite.

From the country only exaggerated cases reach hospital.

(2) The death-rate was high compared with that of the year before—52 deaths, or 6·95 per cent. of the total cases.

We have been unlucky in getting a large proportion of moribund cases; 17 died within three days of admission.

Table I.

Died on day of admission ...	... 3
,, ,, day after admission	... 4
,, 2 days after admission	... 6
,, 3 days after admission	... 4
	17

(3) The daily average of inmates for the year was 55, compared with 65 and 66 of former years.

(4) An abstract of admissions and results is shown in Table II.

An analysis of the diseases treated is presented in Table III.

(5) There were 229 operations scored, the nature and gravity of which appear in the classification appended (Table IV.).

The rule I have always followed in counting deaths after operation is to include every case that dies before leaving hospital, if he has been operated on, without reference to the time that has elapsed or the cause of death.

Changes of Staff.

(6) In April, 1904, I was absent at the Quarantine Conference in Barbados. Dr. C. N. Durrant acted for me.

On December 14th, 1904, I went on leave of absence for three months. Dr. C. N. Durrant acted in my stead until March 14th, 1905, when I resumed.

On July 27th, 1904, Miss Rachel Paterson, the special nurse, having completed the term of her engagement, returned to England. I can hardly overrate the value of her services to the hospital, and to the poor of the Colony. The improvements brought about by her suggestions, example and teaching, are a lasting memorial of her stay in St. Vincent. With her assistance, surgery of an ambitious character was feasible; but it is the best tribute to her teaching that aseptic abdominal surgery has been done since she left, with only the native nurses to carry out the details of preparation and nursing.

It seemed for some months after Miss Paterson left as if we should not be able to repair that loss until, through the generosity of the Colonial Nursing Association, we were fortunate enough to secure the services of Miss Beatrice Empson, who arrived in the Colony on March 28th, 1905.

(7) It is most desirable that the office of special nurse should be made permanent. West Indian hospitals can, with the help of such capable women as we have had, be raised to a high standard of efficiency. It is lamentable to think of how they must degenerate if such help cannot be maintained.

There is abundance of work, and I venture to say, work of an interesting and instructive character. The poor of the Colony experience and gratefully appreciate the way in which the ladies sent to us have done that work.

It is to be hoped that a way will be found to perpetuate the arrangement, that we may not suffer by having known better things.

Statement of Expenses. (Table V.)

(8) £1,305 were provided by the estimates for the year's service. Of this £260 16s. was saved. Paying patients and police contributed £36 11s. 10d. to revenue. The total saving on the estimates was, therefore, £297 7s. 10d.

Out-patient Department.

(9) This being the first complete year since the establishment of this part of the hospital work, a report can now be made. There had formerly been no out-patients of the hospital; the ordinary district cases of Kingstown and No. 1 District were seen by the medical officers at the hospital office.

As a slight effort to grapple with the tertiary syphilis of the island, I took on myself to treat all cases that came to my notice, and give free medicine from the hospital for as long as they could be induced to continue with the treatment.

It is not necessary for these chronic cases to be seen frequently by the doctor, and it was some tax on their time to wait often for hours their turn to come in.

In 1903, therefore, I issued cards which entitled the holders to free medicine and medical attendance at the hospital. After some months' trial the scheme seemed to be working well. It was then formally submitted to His Hon. the Administrator, and he had cards printed for me. The out-patient register was opened on July 1st, 1903.

When a patient has attended about twenty times he is given a new number and card. Up to March 31st, 1905, 629 cards were issued to persons from all parts of the island. The distribution of the patients is as follows:—

From Kingstown District	243
,, No. 1 District	169
,, No. 2 ,, ...	120
,, No. 3 ,, ...	64
,, No. 4 ,, ...	33
Total	629

(10) During 1904-5, 71 old patients attended 822 times, and 228 new patients were enrolled and attended 1,620 times. There have thus been 2,442 attendances for medicine by 299 patients—an average of 8·17 times each.

While many patients have been too careless or indolent to continue with their treatment, there have been, on the other hand, a large number who have consumed a considerable weight of potassium, iodide and mercury. These have received great benefit, which they gratefully acknowledge.

Though intended for the treatment of syphilis and parasyphilis, the system has been allowed to include other chronic diseases, such as cancer and consumption.

Pauper and Leper Asylums.

(11) The appended tables sufficiently exhibit the work performed at these institutions. (Tables VI., VII., VIII., and IX.)

A constant supply of potassium iodide at the Pauper Asylum ensures the circulation of patients; so that a number are returned to independent existence outside.

(12) During the year the recurring difficulty of keeping or of disposing of violent lunatics was to some extent met by the division of two wards. There are now two larger and two smaller rooms for females.

If the asylum at Grenada cannot accommodate the St. Vincent lunatics, some steps must soon be taken to provide a suitable place for the treatment of such cases.

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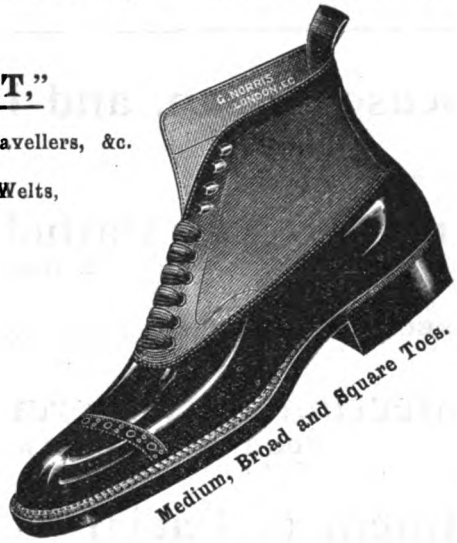
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came to be worshipped for her supposed act of mercy to mankind by attenuating the poison year by year. The disfigurement of the pitting was of no consequence so long as life was preserved; hence a person was looked upon with a feeling of envy, pride and admiration, rather than otherwise, for having the gifts of the goddess visible in the face or body, as a victor from the fight against this horrible disease. German students to-day are as proud of their scars in duels.

The same feeling of pride or admiration is now present, if you take a child with the marks of vaccination on its arms before those who are believers in vaccination (which has come to us by accidental discovery) either in the East or in the West; and, instead of "Mata Devi" being worshipped, the sons of Æsculapius and followers of Jenner are held in esteem, except by the anti-vaccinationists.

I will endeavour to show some of the reasons for immunity from small-pox; of mildness of attacks; and of virulence respectively, which become manifest in certain places from year to year; and this I would desire to do since one of the worthy secretaries of this section, in the *Lancet* of July 1st, 1905, p. 34, has asked the following questions:—

"(i.) Why is it that for years diseases such as plague, cholera and influenza may either remain latent or confined to their endemic centres, and then, bursting their bonds, spread over the world in a pandemic wave?"

"(ii.) Why is it, too, that at times, small-pox is attended with a truly terrible fatality rate, while at others the disease, though prevalent, can hardly be detected in the bills of mortality?"

(iii.) He further mentions that "for several years past small-pox has evinced, not only in this country but also in the West Indies and elsewhere, such a remarkable mildness that, as at Cambridge, the true nature of the malady has been matter for speculation, and such mildness has manifested itself not only in well-vaccinated but also in badly vaccinated communities?"

Why is this?

Those questions, which are put by Dr. Millard and by others too, as to the peculiar behaviour of small-pox in epidemics, are questions which, so far back as 1767, puzzled Mr. Holwell, F.R.S., who was a physician in India, where he resided for thirty years, and after being in practice for eighteen years, became a Governor of Bengal and one of the founders of our Empire in the East. The names of Broughton and Hamilton are also inscribed in the pages of Anglo-Indian medical history in the reign of James I. of England, who was a contemporary of the Emperor Jehangir.

The words used by Holwell so far back as 1767, in a paper before the Royal College of Physicians in London, are the following:—

"The salutary method (of inoculation of small-pox) now so happily pursued in England (howsoever it has been seemingly blundered upon) has the sanction of the remotest antiquity. For five and sometimes six years together it passes in a manner unnoticed from the few that are attacked with it, for the complexion of it in these years is generally so benign as to cause very little alarm; and notwithstanding the multitudes that are every year inoculated with it in the usual season, it adds no malignity to the disease taken in the natural way, nor spreads the infection, as commonly imagined in Europe. Every seventh year, with scarcely any exception, the small-pox rages epidemically in these provinces during the months of March, April and May, and sometimes until the annual returning rains, about the middle of June, put a stop to its fury. On these occasions the disease was of the most malignant confluent kind, from which few escaped that took the distemper in the natural way, and they commonly died on the first, second or third day of the eruption, and the Europeans usually fled from the settlements before the return of the small-pox season. There was hardly ever an instance of a native of the island of St. Helena, man or woman, who, if attacked when in Bengal with the disease in a natural way, escaped with life."

I am sure Dr. Millard will find some consolation in the remarks of that worthy physician of the old days, who found fearful epidemics of small-pox occurred in India every seven years which created sad havoc, while the periods intervening were mild as regards fatality. In the present time such mildness of attacks, as at Cambridge, has given rise to speculation as to the nature of the malady, because such mildness has been manifest not only in *well*-vaccinated but in *badly* vaccinated communities. The reasons for this mild condition are explainable, I think, and I trust that the following will be acceptable.

Several reasons are suggested for such a state of things as has existed since the days of Holwell, and probably long before his time. The last epidemic of small-pox which scared London a short time ago, and which happily was nipped in the bud through the highly efficient medical and sanitary organisation, shows that there is much of a similar condition of things in the matter of pandemic waves now as were present in the two centuries previous, and which pandemic waves depend largely upon the rainfall, or heat and insect-life, whether prolific or otherwise. A large rainfall carries away and dilutes the poison germs; heat encourages an increase; and insect-life loves heat. It was fortunate that in that year the rainfall was heavy, and the flies not so troublesome.

The questions which to my mind must necessarily arise are:—

(1) Is a certain natural immunity secured against small-pox by those who live in a country where it is endemic, but comes in a pandemic wave every seven years?

(2) Does vaccination and revaccination secure this protection from small-pox better than the natural immunity acquired; or is inoculation preferable?

(3) How is it that some people, no matter in whatever epidemics you place them, are proof against attacks?

(To be continued.)

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THE

Journal of Tropical Medicine

NOVEMBER 1, 1905.

THE STUDY OF INTESTINAL AILMENTS.

THERE is no more common remark made by practitioners in the Tropics than that they wish the diseases of the intestinal canal met with in warm countries were seriously considered by investigators. In this opinion every one will coincide, for our knowledge of the etiology and pathology of intestinal lesions has not advanced as have other departments of medicine, and the treatment of these ailments is for the most part empiric merely. Our knowledge of intestinal parasites has perhaps been advanced more markedly than any other department of this particular branch of study, but there is much to be done before even this department is raised to a position of scientific value, so as to serve as a basis for rational treatment. Research is still required to establish how most of these parasites gain access to the body, the point of the gut they primarily settle upon, how infection is to be prevented, by what drugs or other means they are to be got rid of. When we consider dysentery as we know it at the present day, it is plain we are but on the threshold of any understanding. The terms "amœbic" and "bacillary" dysentery are for the most part mere names, and do not carry with them conviction that the words really declare the pathological facts they would seem to imply. Some believe that dysenteric lesions advance from below upwards, holding that the infecting and infective material gains access by the anus; others maintain that the poison enters by the mouth, and that the large bowel is concerned in the disease because of its excretory functions; whilst yet a third group of observers are of the opinion that the primary trouble is one caused by mal-assimilation or from "cold," and that the presence of abnormal bacteria and amœbæ are merely secondary attributes of change.

Colitis in Europe has recently appeared to be prevalent to a degree unheard of twenty years ago; colitis and appendicitis came in together as commonly recognised clinical experiences, and the relation of the one to the other, if there is a relation, requires elucidation.

Sprue, muco-enteritis, chronic dysentery, chronic diarrhœa, membranous colitis, are terms indicating conditions rather than actual diseases, and call for closer pathological investigation. The many forms of intestinal lesion which at present we are content to group under the comprehensive title, "enteric ulcerations," require a long period of experiment and study before any scientific precision can be given to the perplexing descriptions we are acquainted with.

These are but a few examples selected from the field of intestinal diseases. They include some of the most familiar ailments with which mankind has been afflicted, and we know but little more of their true history than has been handed down to us from early times.

The call for further knowledge is amply justified. Several of the blood diseases have been, even within the past ten years, placed on a scientific basis, but the equally, if not the more, important and certainly the more common and deadly diseases, which find expression by way of the intestines, seem to have been neglected.

Review.

Mediterranean Fever.

Reports of the Commission appointed by the Admiralty, the War Office, and the Civil Government of Malta, for the Investigation of Mediterranean Fever under the Supervision of an Advisory Committee of the Royal Society. Part III. London: Harrison and Sons, St. Martin's Lane. Price 2s. 6d.

The contents of this valuable report is apportioned off into nine chapters, with an Introduction by Colonel David Bruce, C.B., F.R.S., R.A.M.C.

Chapter I.

On a Quantitative Bacteriological Examination of the Blood of 103 *Mediterranean Fever Patients.*

By Staff-Surgeon E. A. Shaw, R.N., Member Mediterranean Fever Commission, Malta.

The summary of the work dealt with in this chapter is drawn up by Staff-Surgeon Shaw as follows :—

Summary.

(1) *M. melitensis* has been demonstrated to be present in the peripheral blood of 68 per cent. (two out of three) of the cases examined in a series of 103 cases.

(2) *M. melitensis* exists in the blood in relatively small amount, not having been found in association with a less quantity of blood than 4 cub. mm., and that only in two cases out of 103.

(3) The higher the temperature of the cases for a few days before and at the period when blood is abstracted, the more likely is the latter to contain *M. melitensis*.

(4) The higher the agglutinating power of a blood during the fever the larger is the minimal quantity of blood yielding *M. melitensis* likely to be. A correlation is suggested between this and the patient's powers of resistance to *M. melitensis*.

(5) The smaller the minimal quantity of blood yielding *M. melitensis*, the earlier is *M. melitensis* likely to be obtained from the nutrient broth in which it is being incubated.

(6) *M. melitensis* is more likely to be present in blood abstracted in the late afternoon than in the forenoon. A correlation is suggested between this and the usual evening rise of temperature.

(7) No definite relation can be established between any chronological stage of the fever and the presence of *M. melitensis* in the blood; it is present both early and late in the disease.

Chapter II.

On the Infectivity of the Skin, Breath, and Sweat of Mediterranean Fever Patients.

By Staff-Surgeon E. A. Shaw, R.N.

The result of careful experiments and observation show that (*a*) the active infective agent of Mediterranean fever is not excreted by the *skin*. (*b*) To determine the examination of *breath* patients were instructed to gently blow through sterile broth contained in sterile tubes and this broth examined bacteriologically. Of 115 breath broth-tubes examined in this way in no instance was a single colony of *M. melitensis* found. (*c*) After careful examination of the *sweat* in no less than 251 specimens tested the *M. melitensis* was not recovered in any one instance.

Chapter III.

On the Vitality of the Micrococcus Melitensis Outside the Body in Different Environments.

By Staff-Surgeon E. A. Shaw, R.N.

Summary of results obtained as to vitality of *M. melitensis* outside the body, the same brand, generation, and quantity of *M. melitensis* being used throughout (except in B. 1).

	Days.
A. In mixed broth culture with—	
1. Laboratory contamination	7
2. ,, ,, ...	7
3. Organisms derived from sweat, skin, and urine	2
4. Organisms derived from sweat, skin, and urine	*Nil*
5 to 10. Organisms derived from sweat, skin, and breath; in each	1
B. In pure culture media with a reaction of + 10 acid—	
1. On agar slope (source of *M. melitensis* not noted)	276
2. In litmus milk (source of *M. melitensis* as in all other experiments) ...	144
3. In peptone broth (ditto)...	173
C. In urine (persistent acidity of Mediterranean fever urine as described—	
1. In unsterilised normal healthy urine, four experiments ...	2, 5, 2, and 33
2. In unsterilised Malta fever urine, six experiments	15, 24, 18, 43, 36 and 49
3. In sterilised normal healthy urine, one experiment	17
4. In sterilised Malta fever urine, one experiment	33
D. In diluted urine—	
1. Healthy urine diluted 100 times with sterile tap water	9
2. Mediterranean fever (ditto)	79
E. In urine contaminated milk—	
1. Goat's milk contaminated with 1 per cent. healthy urine	3
2. Goat's milk contaminated with 1 per cent. Mediterranean fever urine ...	38
F. In urine dried on fabrics—	
1. In Mediterranean fever urine dried on lint	5
2. In Mediterranean fever urine dried on navy serge	78
G. In sterilised tap water	50
H. In unsterilised tap water—	
1. Tank water	10
2. Potable water	72
I. In unsterile sea water, two experiments	11 and 46
J. Dry on cover slips	15

	Days.
K. In various earths—	
1. In sand free from organic matter ...	16
2. In various Malta soils—	
(*a*) In sterilised grey-yellow soil with added organic matter	91
(*b*) In sterilised reddish soil without added organic matter	80
(*c*) In sterilised white soil almost free from organic matter	24
(*d*) In sterilised well-manured soil rich in organic matter (bacillary forms of *M. melitensis* developed) ...	83
(*e*) In non-sterilised well-manured soil	Not recovered

Chapter IV.

On the Recovery of Micrococcus Melitensis from the Urine of Mediterranean Fever Patients.

By J. Crawford Kennedy, Captain R.A.M.C.

Summary of Result of Observations.

The excretion of *M. melitensis* in the urine would appear to be of two kinds:—

(1) A sudden enormous gush which stops as suddenly as it appears.

(2) A long-continued excretion of small quantities.

The period of disease most favoured is early convalescence or the last stages of the fever, especially just as a "wave" of fever is subsiding and the temperature reaching normal. It will be noticed that excretion tends to stop if another "wave" begins.

The time of day, or rather the period of the twenty-four hours during which the excretion is greatest, appears to be between 6 p.m. and 6 a.m. On fourteen days on which the urine was examined at both these times *M. melitensis* was recovered, and taking the average daily excretion from the morning and evening, it was found to be twenty colonies per cubic centimetre for the morning to fourteen for the evening. On the fourteen days mentioned above, *M. melitensis* was found thirteen times in the morning urine and only eight times in the evening.

The length of time after recovery during which the excretion may continue appears to be considerable. In one case the patient was discharged from hospital cured, but with orders to attend daily at the medical inspection room. He was supplied with sterile test-tubes and he daily supplied me with a fresh sample of his morning urine; on the seventh day after his discharge I found six colonies per $\frac{1}{8}$ cc.

The longest period (temperature above 99°) after which excretion has been proved is thirty-three days; but one case is recorded where from the sixty-sixth day to the 111th day temperature never reached 100°, yet *M. melitensis* was recovered all this time. There were, however, slight periodical rises to 99·4°, indicating the presence of infection in the system.

The most severe and prolonged cases were the ones that provided the most recoveries. The latest day of disease on which *M. melitensis* was recovered was the 249th.

Chapter V.

On the Vitality of Micrococcus Melitensis in Urine (in which it has been Excreted), on Cloth, in Dust, Sterile Tap Water, and Sterile Milk.

By J. Crawford Kennedy, Captain R.A.M.C.

Summary of Observations.

M. melitensis in the condition in which it is excreted in urine will retain its vitality—

(1) Dried on cloth for seventeen days.
(2) In dust, for less than thirteen days.
(3) In sterile tap water. Not recovered.
(4) In sterile milk for sixteen days.

M. melitensis derived from urine, grown on media, and then added to Mediterranean fever urine, retains its vitality—

(1) Dried on cloth for fourteen days.
(2) Dried in dust for forty-four days.
(3) Mixed with sterile tap water for twenty days.

Chapter VI.

A Preliminary Note on the Examination of the Blood of Goats Suffering from Mediterranean Fever.

By Dr. T. Zammit.

On June 14th I examined the blood of six goats and obtained the following results:—

Goat No. 1.—Strong immediate reaction, in dilution of 1 to 20.

Goat No. 2.—Strong immediate reaction, in dilution of 1 to 20.

Goat No. 3.—Strong reaction, after half an hour.

Goat No. 4.—No reaction.

Goat No. 5.—Strong reaction after half an hour.

Goat No. 6.—Strong immediate reaction.

Chapter VII.

Preliminary Note on Goats as a Means of Propagation of Mediterranern Fever.

By Major W. H. Horrocks, R.A.M.C.

Conclusions.

The results obtained show that some of the goats in every herd examined are suffering from Mediterranean fever. The *M. melitensis* is exuded in the milk in enormous numbers when the disease has been present sufficiently long to cause a change in the physical characters of the fluid. It is also excreted in considerable numbers even when the animals are in "full milk," and no changes have occurred in either the physical or chemical characters of the milk.

The *M. melitensis* is also excreted in the urine of goats suffering from Mediterranean fever, but up to the present it has only been found when the disease has existed for some time and physical changes have occurred in the milk.

Chapter VIII.

Examination of Goats' Blood for Reaction to Mediterranean Fever.

Of 161 goats examined 77 gave no reaction; 84 reacted to Mediterranean fever.

Chapter IX.

Results of Examinations for the Isolation of Micrococcus Melitensis from the Blood, Urine, and Sputum of Cases Infected with Mediterranean Fever in Haslar Hospital.

By P. W. Bassett-Smith, Fleet-Surgeon, Haslar.

Blood.—In all 27 bloods were examined from 24 patients with 16 positive and 11 negative results.

Urines.—In all 46 urines were examined of 18 patients; in two instances typical colonies of *M. melitensis* were present as a pure culture, both being from the same patient.

Sputum.—No colonies of *M. melitensis* met with.

In the introductory chapter Colonel Bruce writes: Dr. Zammit communicated some notes on the feeding of goats with *M. melitensis*, which seemed to show that the goat is to some extent susceptible to Mediterranean fever. The following experiments were made by Dr. Zammit:—

Experiment 1.—*White Goat.*

To note the effect of feeding goats on material containing *M. melitensis*.

1904—

Sept. 15.—Examined blood for agglutination. Negative.

Sept. 18.—Fed this goat, adding the contents of a culture of *M. melitensis* on agar to its food.

Dec. 3.—Blood has reacted in dilutions of 1 in 20 to 1 in 100, but the temperature curve shows no rise. Fed again in the same way.

,, 23.—Blood reacts 1 in 300.

1905—

April 29.—Blood reacts 1 in 100. Goat still alive.

1904— *Experiment* 2.—*Red Goat.*

Dec. 3.—No blood reaction. Fed one tube agar.

,, 5.—Fed again.

,, 15.—No blood reaction.

,, 23.—Blood reacts 1 in 20; 1 in 50 after half an hour.

1905—

April 29.—Blood reacts 1 in 50.

Dr. Zammit considered goats to be susceptible to Mediterranean fever, and that the disease is spread to human beings by goats.

On June 23rd, 1905, Major Horrocks wrote that he had discovered the *M. melitensis* in the milk of an apparently healthy goat, and on the 26th he further wrote that he had already found the *M. melitensis* in the milk of five goats taken from two different herds, and that Dr. Zammit had found it in the blood of one of these goats. Horrocks also said that the milk of the goat fed by Dr. Zammit last September was still crammed with *M. melitensis*. It would therefore appear that the Commission are on the eve of an important and may be far-reaching discovery.

On July 18th, 1905, Colonel Bruce received preliminary notes from Major Horrocks, Captain Kennedy, and Dr. Zammit, on the propagation of Malta Fever by means of goats.

These notes show (1) that one or more apparently healthy goats in every herd are excreting *M. melitensis* in their milk and urine; (2) that about 50 per cent. of the goats in Malta react to Mediterranean fever when examined by the serum agglutination test.

It may be objected that no exact proof exists that the drinking of milk containing *M. melitensis* will give rise to the disease in man. When we take, however, into consideration the results of the feeding and inoculation experiments on monkeys, it may be assumed with safety that the disease is propagated in this way, and that no time should be lost in removing such a grave and insidious danger to the public health.

Correspondence.

TO THE EDITOR OF THE "JOURNAL OF TROPICAL MEDICINE."

Dear Sir,—In the Journal of Tropical Medicine, July 1st, 1905, under the heading of "Recent and Current Literature," you reproduce an article from *L' Echo Medical du Nord*, dealing with the subject of Ankylostomiasis. A sentence in this on the use of thymol reads as follows: "It is necessary to avoid oil as a purgative or in any other way, chloroform water, glycerine or ether, &c."

It seems to me that the question of the use of oil as a purgative is of such importance, and the statement here made open to so much doubt, that one feels inclined to appeal to you, Mr. Editor, for an authoritative opinion on the subject.

In this region ankylostomiasis abounds. My own routine treatment is as follows: No food is allowed the evening before the thymol is administered and a large dose of castor oil is given. At 6 a.m. the next morning 30 grains of thymol are administered; the same is repeated at 8 a.m., and at 10 a.m. half an ounce of castor oil is again given. I allow food to be taken as soon as the bowels have been well moved.

I have never seen any evil effects follow the use of the oil.

I was speaking the other day to a Japanese physician with considerable experience in the treatment of ankylostomiasis, and he always uses castor oil with thymol nor has seen any evil result following on the use of the oil.

Scheube ("Diseases of Warm Climates," 2nd Edition) allows castor oil as a purgative after thymol. So at least I am in good company.

I am, Sir,
Yours faithfully,
James L. Maxwell, M.D.

Tainan Mission Hospital, Formosa,
August 29th, 1905.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the Journal of Tropical Medicine *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Revista de Medicina Tropical," Havana, April, 1905.

Yaws.

"Notas Sobre Polypapilloma Tropicum" (Notes on Yaws). By Dr. Juan Guiteras, Professor of Tropical Pathology at the University of Havana.

These notes are taken from a paper by Dr. Guiteras which he read before the Academy of Science of Cuba

on April 14th, 1905. He stated that it was not his intention to offer a dissertation on frambœsia, but simply to avail himself of that occasion for his colleagues to examine histologically this curious granuloma, in order to call attention to the distribution of the disease in the Republic, and to the argument that the said distribution offers against the theory maintained by Hutchinson and others, who hold that the papilloma is nothing else than a manifestation of syphilis.

Dr. Guiteras understands that this affection which goes by the name of "yaws" in English, and "pian" in French colonies, is generally known as "bubas" in Spanish and Portuguese countries; but he fancies that in Cuba several diseases are included under the name of bubas.

The true "frambœsia" or "polypapilloma tropicum" is now restricted in Cuba to a somewhat limited portion of the province of Santiago, namely, to the district of Palma Soriano. He believes that formerly the disease had a more extensive distribution in that island, which was probably maintained by the importation of negroes from the West Coast of Africa, which is one of the endemic centres of the disease.

Although the clinical history of frambœsia undoubtedly recalls that of syphilis, it appears to him that the epidemiological history of the disease in Cuba is a conclusive argument against the opinion of those who hold with Hutchinson that the two diseases are identical. As a matter of fact, frambœsia has gradually diminished in the island, being now restricted to a small mountainous district which has very little communication with the exterior. Syphilis, on the contrary, is not decreasing, and, as is natural, has its principal foci in the commercial centres on the sea-level.

If any other argument were needed, they would find it in the microscopical sections shown that evening. The lesion was characterised by a marked hyperplasia of the papillary body and of the interpapillary prolongations of the epidermis. There is a perceptible cellular infiltration of the papillæ with much dilatation of the vessels, and occasionally also small hæmorrhages —a true papillitis. In other parts there are accumulations of polynuclear leucocytes which sometimes give rise to the formation of small abscesses which are doubtless due to secondary infections.

Moreover, this said lesion which has just been so briefly described is the only lesion in frambœsia. The initial lesion and the secondary lesions are always the same; these conditions most certainly never occur in syphilis.

Neither are the peculiar alterations of the vessels which are so characteristic of syphilis to be found in frambœsia.

The experimental inoculations and the manifestations of immunity prove also, from an etiological point of view, the separate nature of these infirmities.

J. E. NICHOLSON.

New Drugs.

"Appendix to Squire's Pocket Companion." Published by Messrs. Squire and Sons, 430, Oxford Street, London, W., 1905.

DRUGS USEFUL TO PRACTITIONERS IN THE TROPICS.

Acetopyris (antipyrine aceto-silicylate) is a good antipyretic without deleterious action on the heart.

Acid Formic. — Formic acid in 2 to 5-minim doses, given in aerated waters, and the sodium or potassium formate in 45 grains, given thrice daily and continued for ten days, increase power of resistance to fatigue, and serve as a stimulant in lassitude.

Atoxyl, an aniline compound, contains 37·69 per cent. of arsenic, and is said to be forty times less toxic than Fowler's solution, has been tried with benefit in the treatment of trypanosomiasis.

Dose, ¾ to 3 grains (= 0·05 to 0·2 gramme). Globules = ½ grain (0·032 gramme) in each; Elixir = ½ grain (0·032 gramme) in each fl. drm. (3·6 cc.); injection (sterilette) = ½ grain (0·032 gramme) in each 17 minims (1·0 cc.).

Bael Fruit Confection.—A confection prepared from the fresh Bael fruit imported direct from India in the spring months. It retains the odour and flavour of the fresh fruit. Dose, one teaspoonful. Used in dysentery.

Chrysoidin suggested for treatment of trypanosomiasis.

Creosote was supplied to each Japanese soldier in pills as a prophylactic against dysentery.

Malachite Green.—One cc. of a 1 in 2,000 solution of malachite green in normal saline has been injected subcutaneously in trypanosomiasis.

Quinine.—Solutions of the acid hydrobromide and acid hydrochloride (which latter salt, by the way, was made official in the British Pharmacopœia, 1898) are put up in hermetically sealed glass capsules, and may be obtained in white or in dark actinic glass. Each cc. contains 7½ grains of the particular quinine salt.

Saloquinine.—This tasteless substitute for quinine has been further recommended in 15 to 20-grain doses in the treatment of malaria.

Thymol has been recommended in ankylostomiasis in two or three doses of 2 grammes (= 30 grains), at two hours' interval, after a little coffee or broth in the early morning, and after a calomel and senna purge. Six grammes is the limit advised, and a dose of Epsom salts should be given two hours after the last dose to eliminate the thymol from the intestinal tract. Children, ¼ to ½ the full dose. The administration of any of the usual solvents of thymol must be avoided.

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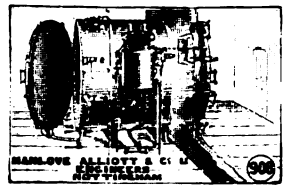
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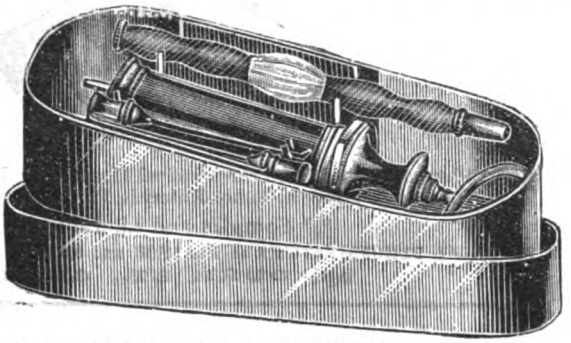
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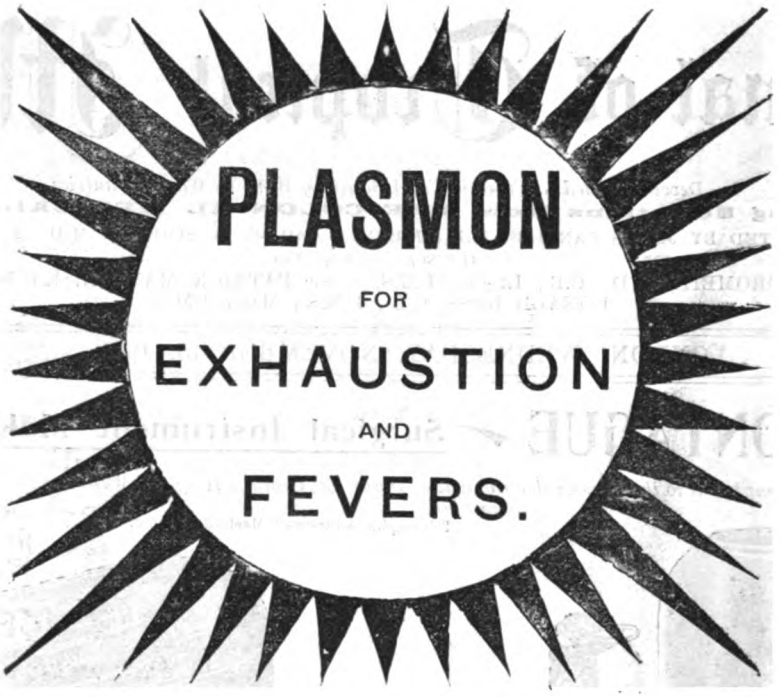
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NOTES FROM ANGOLA.

By F. C. Wellman, M.D.
Corresp. Memb. Am. Soc. Trop. Med.

(*Continued from p.* 320.)

Note VII.—Tuberculosis and the Angola Highlanders.

The writer has seen the rapid spread of tuberculosis among the natives of South Africa ascribed to the fact that they sleep with their heads covered. The natives of Bihé, Portuguese West Africa, sleep in the same manner, often in huts with almost no ventilation: and, although tuberculous whites and civilised blacks are and have long been continually coming into the country, I have never yet seen an incontestable case of tuberculosis in a native of the district, although I have repeatedly examined suspected cases both microscopically and bacteriologically.

Note VIII.—Observation on the Subcutaneous Injection of Quinine.

In view of my experience in this region I am inclined to believe that the numerous accidents arising from this mode of administering quinine are to be attributed to causes other than the lack of asepsis on the part of the operator, or the effect of the salt on the tissues. In the course of hundreds of injections I have had but one slight abscess, which healed within a few days. These injections include whites and blacks, and young and old. The little operation has always been done under aseptic precautions, and the drug invariably placed the full length of a rather short gold or platinum hypodermic needle into the muscle. I have always used either the gluteal or deltoid region, and employed some salt of quinine which is freely soluble in water alone. I suspect that peculiarities of climate, or rather particular micro-organisms dependent on peculiarities of climate, are involved in the very uneven results obtained in different parts of the world from this invaluable method (under favourable conditions) of treating severe malaria infections.

Note IX.—On the Angola "Nutmeg" as an Abortifacient.

In this Journal for July 1st, 1905, p. 205, there is mention of a case of nutmeg poisoning from Australia, the spice having been taken with a view to producing abortion; and the Editors ask if practitioners in the Tropics can give any account of nutmeg as a drug in the treatment of disease, or of its use as a means of procuring abortion amongst natives of the Tropics. The true nutmeg (*Myristica moschata*, Thunberg) is not indigenous in this part of the world, but perhaps a word on its local substitute may not be without interest. The so-called Angola "nutmeg" is the seed of a species of *Monodora* (*M. angolensis*, Welwitsch), of which there are three kinds (var. *sempervirens*, var. *decidua*, and var. *macrophylla*). The species resembles *M. myristica* var. *grandiflora*, Bentham, but is smaller. The seeds from the fruit are called "Olomepe," and are esteemed by the natives on account of their aroma, which cannot be distinguished from that of the genuine nutmeg. They are used as an aromatic spice, and also as medicine. In cases of bowel complaints with severe pains, the "nutmegs" are boiled and the decoction drunk. The general properties of the seeds are considered by the natives to be tonic, stimulating and stomachic. If poisonous, it must be in large doses, as in some districts they are very freely used. I have heard of them being used to procure abortion, but always in conjunction with other plants, generally poisonous *Leguminosæ*.

Note X.—Human Trypanosomiasis in Southern Angola.

In Note V. of this series, I mentioned that sleeping sickness is not endemic in Southern Angola, and that the tsetse-fly of that region (*Glossina palpalis wellmani*, Austen) was probably not a transmitter of the disease. Since writing the note in question, however, I have found trypanosomes in the blood of a Bantu man, aged 30, who had never been out of the district. This observation was subsequently confirmed by Mr. W. E. Fay, a former student of the London School of Tropical Medicine, who shortly afterwards encountered trypanosomes in the blood of a Bantu in Northern Bailundo, who was suffering at the time from malarial fever, the parasites being seen in his blood, together with the trypanosomes. Both these patients had frequently been in the localities infested by *Glossina palpalis wellmani*. I am publishing, through the American Society of Tropical Medicine, a preliminary note on these observations, and hope to shortly publish a more detailed study of the question. In the meanwhile, I record this as a supplement to Note V., it being an interesting fact that trypanosomiasis extends down the west coast of Africa, at least as far south as Benguela. The fact that in the course of hundreds of blood examinations in my former district I failed to demonstrate the infection, coupled with my finding the parasite so quickly in a different district, suggests that the disease may have a peculiar distribution, and, granting its connection with sleeping sickness, that *Glossina palpalis wellmani* may yet assume importance as a carrier of the latest disease.

Note XI.—Myasis and its Prophylaxis.

Myasis, intestinal and cutaneous, is not seldom seen in this region. Several months ago, I sent from Bihé district some dipterous larvæ, which I had removed from the subcutaneous tissue of man and dogs (the imagines of which were unfortunately not secured) to Professor McFarland, of Philadelphia, and more recently have seen a case in which larvæ of *Anthomyidæ* were passed *per rectum*. Their presence in the intestines was accompanied by severe pain, fever, and diarrhœa. I determined the life-history of the fly, and larvæ, puparia, and imagines have been sent home for determination and description, which when received will be mentioned in these notes.

Since writing the above, I have succeeded in producing experimental myasis in goats, using a fly (*Sarcophaga Sp.*), with habits much like the above. The animal was tied under a mosquito curtain in such a manner that it could not move its head, and the flies liberated under the curtain. The larvæ were

deposited in the nostrils, and produced erosions and necrosis. Controls were used. A full account of this experiment, including the *post-mortem* findings, together with a description of the fly used, is being published in America. In view of these observations a rational prophylaxis would consist in keeping all cooked food carefully covered, and in a careful use of a mosquito curtain during the *siesta*.

Note XII.—Ascariasis in the Tropics: Analysis of 158 Cases.

Having some time ago read an interesting analysis of the symptoms presented by 132 cases of this infection which was published by Mr. Walter H. Haw, of Cape Colony, in the *Lancet* for June 18th, 1904, I recently prepared for my own information a similar digest of my series of cases mentioned in this Journal for April 15th, 1904, which were, of course, all verified by microscopical examinations, and of which I retain the records. It having occurred to me that the result might, if published, be of interest to others, I include it in these notes. In arranging the statistics I have also consulted, for the sake of comparison, a study of ascariasis in South China, published by Mr. Preston Maxwell, F.R.C.S., in the Journal for October, 1900. By putting my own observations beside those of Messrs. Haw and Maxwell in the form of a table, the practical identity of the symptoms to which the worm gives rise in the different countries is strikingly shown. The figures in the two middle columns refer to the number of times each symptom was noted.

List of Symptoms	Author (158 cases)	Haw (132 cases)	Maxwell (No. not given)
Abdominal pain	43	29	+
Anorexia	42	22	+
Fretfulness	42	19	—
Convulsions	41	11	+
Gritting teeth	40	—	+
Debility	40	6	+
Fever	39	41	—
Nausea	34	5	+
Sleeplessness	32	19	+
Diarrhœa	30	27	+
Pallor	29	6	+
Vomiting	28	38	+
Anæmia	22	—	+
Night frights	21	19	+
Sleep talking	20	19	—
Cough	18	31	—
Emaciation	18	14	—
Masses in abdomen	18	2	—
Palpitation	17	2	—
Open-eyed sleep	16	1	+
Pruritis ani	16	—	—
Cephalalgia	14	9	+
Constipation	13	10	+
Swollen abdomen	8	3	+
Increased appetite	7	2	+
Delirium	2	4	—
Septic peritonitis	1	—	—

I have excluded from the table a few symptoms mentioned in the articles quoted, but which I have not myself seen. Some of my cases are counted more than once, several symptoms occurring in the same patient.

Bailundo, Angola, October 1st, 1905.

(To be continued.)

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By V. G. Desai, L.M.S.,

King's College.

Dysentery is a local disease of the intestines, and it stands to reason that it should be treated locally. The healing properties of drugs, when taken by the mouth, must be changed before they come in contact with the inflamed surface, and their curative properties thereby reduced. The treatment of dysentery by irrigation or injection is the most rational and highly satisfactory method. Just as any external inflamed surface is washed with soothing lotions, so should an internal surface be washed. An ulcer on the foot is not treated with drugs, astringents, &c., before its foul secretions are removed; yet an ulcer in the colon is treated with astringents without any previous cleansing. Is not an inflamed bladder washed out? Drugs are not trusted to in the inflammation of the bladder; why, then, should they be solely trusted to in the inflammation of the neighbouring intestines. The nasal and ear cavities are washed out before any drugs are applied to them; why should the intestines be not washed out as a routine? In dysentery the inflamed surface covered by the sticky mucus absorbs very little; washing hastens absorption. The general principle of cleansing first and drugs afterwards is followed in every inflammation of the body except that of the intestines. Is not the ordinary medicinal treatment of dysentery quack-like, because the primary principles of treatment are set aside. The present method of treatment is logically and practically ridiculous. Every dysenteric patient ought to be treated with the irrigation process mainly and drugs should be supplementary only. The writer firmly believes that the death-rate of dysentery will be lowered by this process of treatment. By giving injections *per rectum* of a large quantity of well boiled water, the putrefying matter which is irritating the intestines, whatever it may be, is removed at once. About two pints of water with a little table salt serves the purpose. The result is that the abnormal peristalsis stops, the tenesmus subsides, and the inflamed surface comes to its normal state by the process of rest. The septic toxins which depress the spirits are removed more quickly and the patient becomes more cheerful. The fever and thirst subsides, as no time is allowed for the toxins to be absorbed. By irrigation, not only do we not trust the work of removing waste matter to Nature, but we directly spare her energy in that direction. The sparing of Nature's energy is manifested in the upper part of the alimentary canal by the rapid absorption of milk. The patient becomes hungry and he can take and absorb more food; his tongue loses the thick fur and his motions become less frequent. The recovery is very rapid. Injection treatment must be resorted to early in the inflammatory and adynamic cases in order to save the patient; for death is well-nigh certain without it. The patient is to be placed on his back with his buttocks well raised by a pillow placed beneath them. The hot water should be thrown into the bowels through an irrigator at a very slow rate. The abdomen is to be massaged gently during the process; by this method the whole of the large

intestines is washed out. Although thoroughly boiled water is good enough, still the writer always uses boric acid in the injection. One drachm of boric acid with a pinch of soda bicarbonate to one ounce of water is the strength used by him. The alkaline soda dissolves the sticky mucus, and boric acid works as a mild astringent and antiseptic. These drugs, when added to the injection, give immediate relief when borborygmic and fever are prominent symptoms.

The medicines must be absorbed quickly, and better after such alkaline washes. Many cases which were given up as hopeless were successfully treated by the writer in the above way.

Drugs.

Holarrhœna Antidysenterica.—N. O. Apocynaceae, native name, Pandara korda. It is a small bushy plant very common in South India. The bark of the root only is to be used. It is thick and of a dirty white colour, but quite light in weight. It is to be livigated with sour whey; it should be freshly prepared every time for use. One wine-glassful of the livigated solution is to be taken four times a day.

The whey solution (lactate of "tannin") is pleasant to the taste and is carminative and diuretic. It raises the blood pressure and produces flushing of the face, fulness in the head and a sort of pleasant intoxication. It has very marked febrifuge properties and produces diaphoresis. It does not require the help of opium. The patient regains appetite, the tongue becomes clean, the motions become yellow and less frequent, the fœtor of the motions disappears and the tenesmus stops. The intestines do not become distended with gas, the result of fermentation and decomposition. The patient becomes cheerful as the manufacture of toxins is stopped, and he sleeps well. This drug is a capital remedy in the "white" variety of dysentery. Holarrhœna is far superior to ipecacuanha in every way, as none of the bad effects of the latter were ever noticed by the writer; besides it is cheaper than ipecacuanha. It is a pity that it is not even mentioned in the *British Pharmacœpia.*

Ipecacuanha is good in the "red" variety of dysentery, but some nervous persons cannot bear even a grain of it. Sine-emetine is not as good as the pure drug, and even then it produces nausea in some. Its great defect is that opium has to be given in large doses to check the nausea. The drug is costly, the patient has to remain without nourishment for a long time, and has to lie in bed and so cannot attend to his daily work. Holarrhœna has none of these drawbacks. Ipecac. produces diarrhœa and it does not kill the fœtor of motions. It is not febrifuge, and it produces great depression, sometimes so much so that it renders some people melancholic. It works better when injected *per rectum.* Opium requires to be added to this injection. In the Ipecac. treatment quinine requires to be given to control the fever. It should be injected *per rectum.* It works then as a stimulant antiseptic to the mucous membrane as well.

Castor Oil.—The O. C. Ricini of B.P. invariably cures mild cases of dysentery, especially in children. It flushes out the intestines and removes irritating matter, and is astringent in its after effects. It must not be used too long, for there is the chance of setting up catarrh of the intestines, if it has not been judiciously selected.

Saline Mixture.

℞.	Sodii sulph.	...	...	dr. i.
	Mag. sulph.	...	...	dr. i.
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This saline solution is an efficient cholagogue in dysentery, suited especially to plethoric people. By its cholagogue property it renders the intestines antiseptic and the motions become yellow, by its purging property it flushes and removes the irritating matter.

Liquor Hydrargyri Perchloridi cures the "white" variety of dysentery by its antiseptic properties; its griping tendency is fairly well corrected by chloroform water.

Bismuth and other such astringent drugs irritate the intestines more and more by solidifying the contents. They oppose Nature in her efforts of cure, viz., removal of irritants by efflux of water. This line of treatment is absurd.

Opium relieves pain, no doubt, but the beneficial effect is delusive, for it hinders the peristaltic movement of the intestines and so the irritating matter remains longer in contact with the inflamed surface. It deranges the liver and upsets the digestion. Opium is the chief factor in the high death-rate of dysentery in children. It may occasionally prove beneficial when given by way of rectal injections.

Calcium chloride checks hæmorrhage in acute cases, it can be used with confidence in 30 gr. doses every four hours. When a patient has lost much blood port wine might be injected *per rectum.*

Silver nitrate proves wonderfully effective in many subacute and chronic cases. It may be given in one grain doses every four hours—the B.P. dose is very small. In order to get its full antiseptic effects it must be given in big doses fearlessly, it may be injected *per rectum* in every chronic case, using as much as 10 grains to one pint of hot water. At times a little opium has to be added to this injection, as it produces smarting in some people. Silver nitrate is the drug which can effect a cure in dysenteric ulcerations with greatest certainty.

Diet.—We must not forget that scurvy is one of the causes of dysentery. Pure milk is the best diet both in acute and chronic cases. A pinch of table-salt should be added to the milk. No other food is admissible in acute cases. Soups must not be given on any account, as they produce decomposition in the intestines, the motions stink horribly and the temperature rises. Good port wine should be given freely to debilitated people. Bael fruit syrup freshly prepared from partially ripe fruits is a good astringent, but it is not a specific. Red gum syrup and mangostein syrup work well as beverages to quench the thirst. Coriander well pulverised with equal quantity of sugar-candy is a useful carminative. Albumen water is as bad as soup.

SMALL-POX INOCULATION IN INDIA.

By Major G. H. Fink, I.M.S., M.R.C.S., L.S.A.(Lond.).

(*Continued from p.* 321.)

To these questions I will endeavour to give my answers collectively and not separately. After having been in India, where I have observed that the sanitation and water supply differs in one district from another; and where small-pox prevails in some but is absent from others; and in the measure in which sanitation and water supply are good, so might the results from epidemics be expected. Many persons believe that doctors secure their immunity from various infectious and contagious diseases by some elaborate and secret recipe of their own which they will not divulge to anybody else lest there be no patients for the doctors. I am sure we are all much obliged to those persons for the credit bestowed on our Art of securing such, by the learned and artful prescriptions they suggest for the reason of our immunity; but there is not a single one present here, I hope, notwithstanding this, who does not believe in the fact, that doctors and nurses are comparatively free as a rule from catching infection as other people. Our great prescription, I maintain, is our faith and belief in the doctrines we teach and which we must largely carry into practice in a conscientious or an unconscious manner, and thus our familiarity breeds a contempt for the germs or armies of micro-organisms which we daily battle with in our daily rounds. I do not mean to say that medical men and nurses do not fall victims to epidemic diseases, for this would be nonsense; but we possess no prescription beyond the ordinary precautions of cleanliness and wholesome living—our antiseptics—and know at the right moment, perhaps, when to put on the brake, as we are trained in this direction, which the laity frequently neglect in the midst of the art of money-making and bustling which the world is largely infected with and which doctors as a rule are largely free from, hence the law of compensation as an exchange.

> The remedies oft in ourselves do lie,
> Which some ascribe to Heaven.

In the Tropics it is strikingly shown how the difference in sanitation and living secures a certain immunity against various diseases when present in an epidemic form among a large community. The plague in the East is an illustration as to the benefits enjoyed through healthy and wholesome living, good sanitation and plenty of sunlight and pure air in the houses, for Europeans have suffered less than the natives. Doctors, working in the thick of an epidemic, though some fall victims, largely escape through these reasons, I feel, for, before any germ can get a foothold, the soil in the human system must be ready to receive it, and then the mischief begins. Such a prepared soil is overcome through temperate living and sanitation, and in these I include exercise short of fatigue, proper sleep and rest. I know one medical gentleman who lived in the thick of a great city amid cholera, small-pox, malaria, and other vile diseases, and at last became like a piece of parchment in India, and this condition seemed, from his own account, to be induced through successive years of inoculation of his system through the atmosphere which made him proof against all diseases. He still lives after many years in the Tropics, and is now in this country, but looks less of the parchment texture that is acquired by the veterans of tropical conquests against the army of micro-organisms than he used to.

It is, I think, now an accepted fact that such an inoculation of the system can secure immunity if the system be not allowed to run down too rapidly, and the phagocytes thereby lessened or weakened. I say this, because, if merely long residence in the Tropics, without other reasons, secured this immunity, then the several generations upon generations, during which epidemic waves have come and gone, should have made the inhabitants of India proof against anything: but such is not the case. The reason, I believe, is lack of knowledge on the part of the majority, when to put on the brake. Another thing to be noticed is, that when an epidemic of great severity comes, as a rule, it carries off large numbers at the beginning and then abates, and I feel that it takes off the predisposed where the phagocytes are weak, while it leaves those who are either better in this respect or have become gradually inoculated, and thus secured immunity through attenuation of the virus while the epidemic is proceeding and health is maintained *pari passu*. It goes without argument, that in *most* diseases the germs will also find out the weak spots in an individual, whereas if the person be healthy and robust, and with a good supply of efficient phagocytes, he stands a good chance of escaping from an epidemic.

If germs or sera can be introduced hypodermically with a lancet or point of a hypodermic syringe, I do not see why they also cannot be conveyed to the human body through the mucous surface, by contact, and there become absorbed while in the ordinary channel of inoculation; and if a person is fortunate enough to arrive in India at an intervening period after an epidemic has spent its force, when there is only a mild epidemic of a disease (small-pox for example), if he or she be in good health, though unvaccinated, three to four successive years of care with good health in the midst of mild epidemics would secure, I should say, an immunity in that person. In the case of a severe epidemic and high mortality it is a fight between the powerful germ and phagocytes, and then it greatly depends upon one's general health and surroundings.

Then, again, another question arises. Would it be possible for a child *in utero* to have secured immunity through a healthy mother who escapes from an epidemic of small-pox of a mild character, or several mild epidemics, which has secured immunity for the mother? Such a child born, when grown up, if even not vaccinated at all, might, if immunity through its mother be secured *in utero*, either escape an attack of small-pox during an epidemic after its birth, or, if it suffer, it might be only a mild attack, which would give rise to speculation perhaps as to the nature of the disease being truly small-pox. The resemblance of such cases might be nearer to chicken-pox as the epidemic in the West Indies lately was the case.

I merely mention these points as *suggestions*, and not as facts, since they are of interest to follow up, and this can only be done carefully and thoroughly



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LONDON SCHOOL OF TROPICAL MEDICINE.
19th Session. October-December, 1905.

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failed each time, which showed I was in a condition of immunity for that period. On the fourth year my general health was below par, and Colonel King, the Sanitary Commissioner of Madras, sent round some lanoline calf-lymph to be tried by civil surgeons as to its efficacy and relative value, as compared with other lymph used previously. The parents of the children in the school where I wished to introduce it, had to be consulted before trying this new lymph which came in little boxes instead of tubes, and so one had to be careful to give no cause for suspicion or complaint as people soon note the difference and ask questions in a country such as India. In order, therefore, to satisfy the parents as to the goodness of the new lymph and of its being beyond suspicion, I vaccinated myself first, in the calf of my leg, little expecting a good result, as I had failed in previous years with tube lymph; but to my utter astonishment, the vesicles appeared on the eighth day while I was out doing my inspections of villages which compelled me to abandon my marches on horseback, and I had to take to a bullock cart which I had for my children as it was most painful to move the leg, and worse to ride. The vesicle was perfect and most typical. The parents then allowed their children to be done, as they saw I was still alive and well after it. This was a very practical test I am sure.

We have the words of one, who so far back as 1767 uttered before the Royal College of Physicians the truth in so many words as to small-pox appearing every seven years in epidemic form, namely, Holwell. It is, therefore, to my mind clear from my own personal experience in India, and from what one knows of the history of small-pox and of vaccination, that unless protection from small-pox is secured by either a mild or severe attack of the disease, or that natural or acquired immunity which some enjoy through the channel mentioned, vaccination and re-vaccination, as I shall show, is the best, surest, and mildest safeguard against future epidemics for the practice of inoculation is *dangerous* and *wrong*. We have not arrived at that stage of knowledge in bacteriological or physiognomical diagnosis of diseases which enables us most unmistakably to certify, that such and such a person or child by mere examination of the blood, or from appearance merely, can be declared to be certainly immune against small-pox; but when we see objectively the typical marks or pitting with small-pox, or vaccination and re-vaccination, we can affirm that there is every hope of an immunity or protection having been secured, either permanently or temporarily, unless we err in mistaking the pitting of chicken-pox for small-pox, or a circular scar on the arm for a vaccination scar. It is, therefore, our bounden duty to be clear in our diagnosis, and in case of doubt to vaccinate or re-vaccinate. Let us hope that a time will arrive when our anti-vaccination friends are able to assist us by such perfect diagnostic signs of immunity present, and until then, we, as advocates of our science and art, must hold our ground firmly, shoulder to shoulder, on the objective truths which have been clearly proved since the days of Jenner up to the present.

The testimony of an ancient people such as the Hindoos, whose homes were desolated in the past with such severe small-pox epidemics, compelled them to believe that an attack of small-pox conferred immunity or protection from future attacks, and thus the introduction of inoculation came as a matter of experience which induced a mild attack by taking the virus from the body of a person who had suffered mildly at an intervening period (and not at an epidemic period), which virus was therefore attenuated, because the disease was dying out gradually and naturally, and becoming milder and milder each year. Such an inoculation of the attenuated human virus induced a crop of 50 to 200 pustules, but they were scattered and not confluent, because the original attack was not so grave. Have not the methods of Pasteur and others in the field of bacteriological research been an attenuation of the virus through animals instead of human beings? The arm to arm vaccination which has been abandoned in this country; but still kept up in many parts of India, though decried, has its advantages and disadvantages, but the lymph from tubes has been proved to be safer if certain precautions be exercised. But apart from the relative value of the arm to arm method, and that from the calf (either direct or from tubes of lymph) there is sufficient evidence from our own experience of the Hindoos, that inoculation from mild epidemics of small-pox, and vaccination with re-vaccination every five or six years, lessens the chances of a severe epidemic of small-pox; while on the other hand, inoculation possesses a dangerous element in practice in the hands of the ignorant who cannot distinguish a severe from a mild, or a discrete from a confluent case, hence the chances of creating an epidemic of small-pox. This element of danger does not exist in vaccination and re-vaccination, nor has it ever been proved that the latter practice has created a small-pox epidemic, which the former certainly does create at times, and is open therefore to danger, so rather than run risks by encouraging inoculation there has been legislation in the matter against such a practice, and which legislation I am sure, we all heartily uphold and desire to see carried out most vigorously in the interests of the public.

At this point, I feel it would be of great interest to some present to know, that although inoculation for small-pox is wrong and has been legislated against in India, yet there are certain parts of the country where it is still carried into practice to this day in remote villages. The virus is taken in quite a haphazard fashion from a person suffering from either small-pox (in a confluent or other form) and even in some cases from a child with chicken-pox (when it is useless) and passed into the wrist at the root of the thumb or the extensor surface of the forearm between the lower and middle third, or into the upper arm. As a rule one large scar is left, about the size of a two-shilling piece.

Here I feel it my duty to mention my experience in the work of vaccination as a sanitary and health officer of a district in India, namely, Sibsagar, in Assam, where I was Civil surgeon, and where I found inoculation for small-pox had prevailed, and was still prevailing. Sibsagar District is in the Upper Assam Valley, with a population of 457,274 souls, and is important from a commercial aspect because of the

THE

Journal of Tropical Medicine

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FROM

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TABLE II.

ABSTRACT OF ADMISSIONS AND DISCHARGES, 1904-5.

	Remaining from 1903-4	Admitted	Total Treated	Well	Relieved	Not Improved	Died	Carried forward to 1905-6
Males	29	375	405	256	73	10	34	32
Females	22	322	343	238	61	5	18	21
Total	51	697	748	494	134	15	52	53

TABLE V.

EXPENDITURE AND REVENUE, COLONIAL HOSPITAL, 1904-5.

Sub-head	Expenditure	Vote	Savings		
	£ s. d.	£	£ s. d.		£ s. d.
Salaries	429 9 0	444	14 11 0	Fees from Paying Patients ..	12 6 11
Dietary	390 9 11	500	109 10 1	,, ,, Police @ 6d. per day ..	24 4 11
Medicines and Disinfectants	83 1 11	150	66 18 1		
Clothing and Bedding	37 17 3	50	12 2 9		
Furniture and Implements	15 6 4	25	9 13 8		
Medical Comforts	12 14 6	40	27 5 6		
Fuel and Lights	25 2 2	35	9 17 10		
Uniforms	9 10 4	15	5 9 8		
Scavenging and Cleaning	14 9 6	15	0 10 6		
Telephone	6 0 0	6	0 0 0		
Contingencies	3 3 9	5	1 16 3		
Instruments	16 19 4	20	3 0 8		
	£1,044 4 0	1,305	260 16 0		£36 11 10

TABLE VI.

PAUPER ASYLUM.

	Remaining from 1903-4	Admitted	Total Cases	Discharged	Died	Remaining over
Males	66	32	98	15	22	61
Females	40	34	74	16	13	45
Total	106	66	172	31	35	106

TABLE VII.

LEPER ASYLUM.

	Remaining from 1903-4	Admitted	Total Cases	Discharged	Died	Remaining over
Males	3	3	6	1	—	5
Females..	6	1	7	2	1	4
Total	9	4	13	3	1	9

TABLE VIII.

LUNATIC ASYLUM.

	Remaining from 1903-4	Admitted	Total Cases	Discharged	Transferred to Grenada	Died	Remaining over
Males..	4	3	7	2	—	1	4
Females	7	8	15	5	4	—	6
Total	11	11	22	7	4	1	10

TABLE IX.

EXPENDITURE AND REVENUE, PAUPER AND LEPER ASYLUMS, 1904-5.

SAINT VINCENT.

Sub-head	Expenditure	Vote	Savings
	£ s. d.	£	£ s. d.
Salaries	195 18 0	196	0 2 0
Dietary	617 9 0	675	57 11 0
Clothing and Bedding	111 8 3	150	38 11 9
Fuel and Lights	10 16 6	15	4 3 6
Medicine and Disinfectants	35 12 5	50	14 7 7
Medical Comforts	15 0 10	20	4 19 2
Furniture and Implements	14 8 2	30	15 11 10
Upkeep of Donkey and Cart	6 19 5	9	2 0 7
Telephone	5 0 0	5	0 0 0
Scavenging and Cleaning	14 7 1	15	0 12 11
Contingencies	5 18 0	8	2 2 0
	£1,032 17 8	1,173	140 2 4

RETURN OF DISEASES AND DEATHS, 1904-1905, AT THE

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	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	2	—	3
Anæmia	—	—	—
Anthrax	2	—	2
Beri-beri	—	—	—
Bharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Congenital Malformation	—	—	—
Debility	—	—	—
Delirium Tremens	—	—	—
Dengue	—	—	—
Diabetes Mellitus	—	—	—
Diabetes Insipidus	—	—	—
Diphtheria	—	—	—
Dysentery	1	—	1
Enteric Fever	3	1	4
Erysipelas	—	—	—
Febricula	—	—	—
Filariasis	—	—	—
Gonorrhœa	11	—	11
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	—	—	—
Kala-Azar	—	—	—
Leprosy	—	—	—
(*a*) Nodular	1	—	1
(*b*) Anæsthetic	—	—	—
(*c*) Mixed	—	—	—
Malarial Fever—	31	2	31
(*a*) Intermittent—	—	—	—
Quotidian	—	—	—
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	—	—	—
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	—	—	—
Malta Fever	—	—	—
Measles	—	—	—
Mumps	—	—	—
New Growths—			
Non-malignant	13	—	14
Malignant	10	1	11
Old Age	—	—	—
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	—	—	—
Rheumatism	4	—	4
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	—	—	—
Septicæmia	—	—	—
Sleeping Sickness	—	—	—
Sloughing Phagedæna	—	—	—
Small-pox	—	—	—
Syphilis—			
(*a*) Primary	11	—	12
(*b*) Secondary	134	5	153
(*c*) Tertiary	—	—	—
(*d*) Congenital	—	—	—
Tetanus	3	2	3
Trypanosoma Fever	—	—	—
Tubercle—	14	4	18
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the			
Cellular Tissue	25	2	26
Circulatory System—	—	—	—
(*a*) Valvular Disease of Heart	10	4	10
(*b*) Other Diseases	4	2	4
Digestive System—	—	—	—
(*a*) Diarrhœa	8	1	9
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	—
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	—	—	—
(*g*) Cirrhosis of Liver	—	—	—
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	33	5	36
Ear	—	—	—
Eye	9	—	10
Generative System—			
Male Organs	9	—	9
Female Organs	69	4	71
Lymphatic System	—	—	—
Nervous System	21	4	22
Nose	—	—	—
Organs of Locomotion	7	—	8
Respiratory System	15	3	15
Skin—	23	1	29
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	—	—	—
(*f*) Other Diseases	—	—	—
Urinary System	25	2	26
Injuries, General, Local—			
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	42	—	43
Parasites—	135	6	139
Ascaris lumbricoides	—	—	—
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	3	—	3
Surgical Operations—	—	12	229
Amputations, Major	—	—	—
,, Minor	—	—	—
Other Operations	—	—	—
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

No. 15.—The Straits Settlements.

Medical Report on the Straits Settlements for the Year 1903.

By Dr. D. K. McDowell.

Principal Civil Medical Officer, Straits Settlements.

Population and Health.

(1) The following table shows the estimated population and the birth and death-rates for the years 1902 and 1903 in the several Settlements.

	Estimated Mean Population		Births		Deaths		Birth Ratio per mille		Death Ratio per mille	
	1902	1903	1902	1903	1902	1903	1902	1903	1902	1903
Singapore	235,301	240,833	4,852	5,089	12,485	11,505	20·62	21·13	53·06	47·77
Penang	129,546	130,121	2,379	2,495	5,787	4,988	18·37	19·17	44·67	38·33
Dindings	4,181	4,236	135	136	185	137	32·29	32·10	44·25	32·34
Province Wellesley	110,267	117,078	3,698	3,813	3,476	3,279	31·82	32·57	29·90	28·01
Malacca	95,924	96,276	3,457	3,976	3,037	3,332	35·50	41·30	31·66	34·61
Total	581,219	588,544	14,521	15,509	24,970	23,241	24·98	26·35	42·96	39·49

(2) A notable and satisfactory feature in the above table is that in all the Settlements excepting Malacca the birth-rate in 1903 has gone up and the death-rate has fallen. The high death-rate in Malacca the Colonial Surgeon attributes, among other causes, to the heavy infantile mortality.

(3) The death-rate for the whole Colony was 39·49 in 1903, as against 42·96 in 1902, and 39·85 in 1901, and taking this as our guide, the public health of the Colony was better than in the previous two years, but it could not be considered as good. The improvement of the rate in 1903 over that of 1902 is, however, more apparent than real, for eliminating the deaths which took place on the quarantine stations, the rates would stand at 40·21 in 1902 and 39·01 in 1903, a slight improvement only.

(4) Out of the total number of deaths registered in 1903, 3,865 were amongst infants of under one year old, against 3,631 in 1902. This high infantile mortality, which was greatest among the natives, was no doubt due to want of care and over-feeding. Another factor contributing to the high death-rate in this Colony is the large number of paupers and decrepit people who find there way here from the neighbouring countries. The Colonial Surgeon, Penang, reports that strict measures are being carried out there against the landing of such undesirable people.

(5) The subjoined table gives the number of zymotic diseases in the several Settlements in the years 1902 and 1903, and deaths therefrom, not, of course, including cases imported to the Colony.

Plague.

The three cases of plague in 1903, all of which proved fatal, took place in different parts of the town among persons who had been resident here for not less than one year. One was an Indian and two were Chinese. All three cases were verified by bacteriological examinations and in no one could the source of infection be traced.

	Plague				Cholera				Small-pox			
	1902		1903		1902		1903		1902		1903	
Singapore	4	4	3	3	842	759	226	190	159	67	109	29
Penang	..	..	..	..	9	7	..	..	304	91	227	57
Province Wellesley	..	..	..	..	41	33	..	..	85	19	258	49
Malacca	..	..	..	..	1	1	..	..	57	22	266	40

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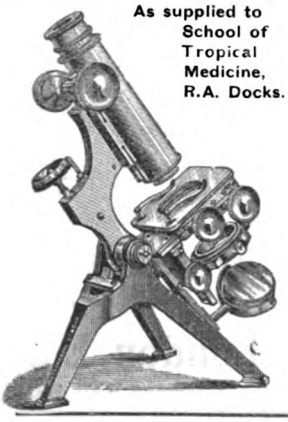
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tea trade and a large community of Europeans, there being 163 tea gardens with an enormous imported native labour force present, and which labour force is chiefly imported from the congested districts of Bengal, Behar, and the Central provinces.

The name Sibsagar comes from "Siva" or "Sivu" the destroyer (one of the gods of the Hindu Trinity) and "Sagar" which means ocean. The district is the ancient capital of Assam, on the banks of the great Brahmapootra River the largest river in India, which takes its origin from a mere trickle in the Himalayan range beyond Darjeeling, and in the heart of Thibet. Brahmapootra, means the country of Brahma, the great Brahm of the Hindoo religion.

Sibsagar district boasts of several ancient temples scattered in various parts, and also of large tanks or lakes, artificially constructed by the Ahom Rajahs, with great skill. Doubtless these people living in the country presided over by Siva the destroyer, felt in the midst of great epidemics of small-pox, the dire need of a purer water supply than they possessed, and so these tanks, some of which are half a mile square (as in Sibsagar town in the centre of a European population) and are kept at the present time as the drinking water supplies by the municipal bodies. Their necessity is evident, and the good they do is absolutely proved, for there are three municipalities in the district, namely, Sibsâgar, Jorhât, and Golaghât, and whilst the two former have such water supplies as are pure the last place has not, but chiefly depends for its supply on surface drainage from the rice-fields, and there is a very heavy mortality as the consequence when compared with the two former.

The Civil surgeon of the district is also sanitary and health officer, and among several hospitals, a jail, and two lock-ups, and the sanitary inspection and vaccination of the rural circles and municipalities above mentioned, he has to visit tea gardens which are placed on the "black list," because the labour forces have a mortality of 7 per cent. or over, from all causes present. Out of these 163 tea gardens, as a rule, about 25 to 40 are annually on what is known as the "black list," through defects in their sanitary arrangements and hygiene which have to be reported to the government twice a year in some cases, and once a year in others, when they are known as first and second class gardens. These tea gardens have a European medical practitioner, and a staff of native doctors and vaccinators of their own, there being as a rule one European in medical charge of six to twelve gardens or more, whose returns of birth-rate and mortality are submitted through the civil authorities to the Civil surgeon, and then to the Government; the vaccination and sanitation though done by their respective staffs come under the general supervision of the Civil surgeon who is practically a Chief medical officer. The labour force of the gardens in Sibsagar comprise one-fifth of the total population of 457,274 souls, and the balance therefore are under the immediate eye of the health officer, who is Sanitary officer and Civil surgeon. For this great work under his care with a large amount of office work and returns submitted weekly, he earns his pay in so many rupees from the Government; and if called in by private patients he is allowed to treat them; but his fees have been fixed by the paternal authorities, who can move the wheels along smoothly or roughly as it pleases them. I mention this because so few do really realise the heavy responsibilities we have, and practically we do our duty to check epidemic disease from reaching the West.

The native staff under the Civil surgeon comprise six hospital assistants for each of the hospitals under his charge, one native superintendent of vaccination, while the hospital assistant is also superintendent of vaccination within the area of each of the three municipal towns above named, twenty-four rural vaccinators, three municipal vaccinators. There are, as a rule, one dresser and compounder to each hospital, one clerk to the Civil surgeon's office, and the menial establishments of cooks, chowkidar or porter, and sweeper.

In addition to the above duties, the Civil surgeon is also examiner, or rather president and examiner of the Examination Board for passing the native doctor class of the tea gardens in his district.

The vaccination of a large district with an enormous labour force in the tea gardens, of which Sibsagar has 163 small and large gardens, means a proper organisation if epidemic small-pox is to be kept in check, and the cause of the outbreak traced to its proper source and dealt with locally.

The plan concerted by me for carrying on this work efficiently, was as follows, and this was specially due to prevent the *ingress* as well as *egress* of small-pox, in, or out of the district.

Each of the large municipal areas (Sibsagar, Jorhat, and Golaghat) had a native hospital assistant in charge of the dispensary, who was also superintendent of vaccination for his sub-division, but responsible to the Civil surgeon at the headquarters of the district. To each of the vaccinators, municipal as well as rural, I gave at the commencement of the work of vaccination, a sectional map of the district made out on wax-paper, with about twenty-five villages on each map. These villages were to be inspected by the municipal vaccinators from the centre to the periphery in successive circles by rotation, and that circle was not to be given up till the vaccination and inspection was fully completed. The rural vaccinators were to visit the villages at the boundary of the district in semi-circles towards the centre, until they met and joined hands with the municipal vaccinators, when, if there were time (as vaccination is only done from October to April 15th), they now worked in the reverse order, *i.e.*, municipal vaccinators to the centre, and rural vaccinators back to the periphery vaccinating all newly-born children over six weeks old. The object of such a plan is evident, for in a district where the labour forces of the tea gardens were immigrants from the congested areas of India, our desire was to fix the responsibility on the right quarter, or source, whence an epidemic of small-pox arose, since there was an indigenous population who were comparatively clean, and naturally one wished to be fair to them.

What I wished to ascertain were the following points:—

(1) Whether small-pox was *imported* from without chiefly by immigrants, or endemic; or was due to the practice of *inoculation* among the indigenous population?

(2) Whether the figures for primary and re-vaccination in past years were to be relied upon, and whether it was possible to have 40,000 vaccinations to be done annually in this district for several years together?

(3) Whether it was possible in a district where vaccination and re-vaccination had been carried out as stated vigorously for thirty years or more, to have epidemics of small-pox breaking out through the usual channel of conveyance by the traffic routes of human intercourse between Assam and India?

(4) Whether small-pox and chicken-pox had not been confused at times?

To do this and get to the source, I had weekly returns sent in from vaccinators in both areas, *i.e.*, rural and municipal, first to the native superintendents who checked them, and then sent them to me as health officer. This enabled me to go to any village and inspect the adult and infant population, and thus note how many were already protected from small-pox by having had a previous attack, or through being vaccinated and re-vaccinated efficiently; and also how many had been inoculated? and this could be done at any time during my rounds, since the head-man of every village has a small parchment book containing the birth-rate and mortality of a village, with the births and deaths noted, and it is supposed to be up to date. All this entailed labour, but it was well worth the trouble in order to arrive at the solution of the difficulties I was entrusted with by the government, and also to check the practice of inoculation among a people who were of the best of intentions, but ignorant about the value of vaccination.

Such a plan was considered very necessary, since I found from the annual returns of past years, as well as from the medical-history of the district, and from personal observation, that there were small-pox epidemics of a grave character from time to time, and I wished to find out the responsible agents for the good of the whole community as well as for the good of the tea industry.

It indicated, moreover, (1) that the figures for primary and re-vaccination in past years might be open to serious criticism; (2) That the practice of re-vaccination was not resorted to in all suitable cases; (3) That inoculation might be responsible for small-pox epidemics; and since the government considered it as an illegal measure, my clear duty was at all risks to check it, and so I determined on the correct plan of operating for the health of the whole district and community, and the plan I am glad to say has borne fruit since.

I found after the work was started, that it was impossible in a district with the birth-rate so low and a high mortality; and with a population who through epidemics of small-pox in previous years had 50 per cent. of their number pitted with small-pox; and also where vaccination had been vigorously carried on, as stated in the returns for years together to have so large a return as 40,000 primary vaccinations annually which I was expected to keep up and increase if possible. I was able to prove my point that it was impossible, at any village on the spot, that vaccination and re-vaccination had not been properly done, but inoculation practised. Now, how was this effected?

In the municipal areas, I found from the reports of my superintendents, that the work was very irregularly done, for, when a vaccinator was supposed to be working at such and such a village on his map and from his returns of the previous week, when the superintendent went down unawares to inspect his work, he was absent and at his home. Moreover, that each mark on one arm was described on the register as a vaccination of a patient; hence, for every *one* patient done, *four* marks were represented in the register as *four* patients. One vaccinator vaccinated about forty patients in one day only with four marks each, and rested at his home for twenty-nine days in the month, showing 160 operations per mensem. The same occurred in the rural areas. As for re-vaccination being undertaken, it was hardly ever done. This mere show of reports on paper, was practically discouraging vaccination and encouraging inoculation, and the government salary was a mere nominal one.

Now, as to inoculation, I was informed one fine day by my superintendent, that in one particular part of the rural areas, inoculation was being largely carried out. I told him we must check it as it was contrary to the wishes of the "Sircar" (government). He said, "Sir, if you go near the village the men will come round with 'lathis' (cudgels)." I said, "Well, we must then get the help of the police if such is resorted to, but our duty is clear." We went down to the spot which was reported to have 8,000 people unprotected from small-pox. On arrival a crowd assembled, and I asked for the headman of the village. A man with great dignity, clad in white, came along the village path, and I met him half-way to show that I was willing to meet him in his arguments if he had any. He had two cane chairs brought out as the first modicum of friendliness and a chat on friendly terms, and had them placed under the shade of an orange grove, which was certainly pleasant, and asked me to be seated. I told him I had been so long in my saddle that morning that it was a relief to stand, and I also beckoned him to be seated as he was a priest. He then asked me what I would like to see him about? I said, only to ask if vaccination or inoculation was more acceptable to his people, as the one saved from small-pox, the other gave small-pox. He said that he preferred the latter, as he found from the experience of past years that it was more effectual than vaccination, for when vaccination was performed he often found that children got small-pox after a time, and some died, whilst in inoculation never gave all this trouble. It was done "once and for all." He certainly belonged to a very candid order of anti-vaccinationists one does not often encounter.

I then informed him that vaccination was not supposed to protect children for a lifetime, but it did for a certain number of years, and had to be repeated, and that was the order of the Government. Moreover, there was another disease called chicken-pox which might attack a child soon after being vaccinated, and another disease called measles, which also might attack a child in the same manner and the child might die, but that these two diseases had nothing in connection with small-pox or vaccination, and were distinct diseases; but that chicken-pox was a mild disease, and in some respects resembled small-pox;

that measles was not so mild, and sometimes proved very destructive to life. Our measures were against small-pox and not the other two.

I also informed him that I noticed about 50 per cent. of his rural population in a great many villages had marks of small-pox which could have been prevented if vaccination and re-vaccination had been properly done in past years; and as the Government did not want small-pox nor inoculation, I was obliged to do my duty, and had come to explain matters and nothing else, and I hoped he would let me. (The old gentleman shook his head all the while.) I was prepared to do my duty by vaccination, as ordered, and if he preferred inoculation I would be obliged to report this fact, and to also state that it was the cause in many instances of importing small-pox and creating an epidemic, and as we had had several epidemics it was time to put a stop to inoculation as it had had a fair trial.

The priestly gentleman said he was quite ignorant of all this, and I said I felt sure he was; but as to the pitting with small-pox, he said, that "it was the will of 'Matadevi'" (their god). I said, "Well, the Government would make every allowance for his ignorance in the past, but not now that he was more enlightened on the subject of the differences between small-pox, chicken-pox, and measles, and the part each played."

(To be continued.)

Bilharzia Hæmatobium.

Among the Boers and the South African natives brought to America during the St. Louis Exhibition seven were found suffering from bilharzia.

Anchylostomiasis (Uncinariasis).

Claude A. Smith (*American Medicine*, October 14th, 1905) reports that he has experimentally confirmed the transmission of uncinariasis infection by way of the skin as originally stated by Looss in Egypt.

Cholera.

Poland.—From October 5th to 11th the fresh cases of cholera reported numbered 47, and the deaths from disease 24.

Austria.—In Galicia, in the province adjoining the Russian frontier, four cases of cholera were reported on September 18th, of which three proved fatal.

Yellow Fever.

New Orleans.—With the advent of cold weather, cases of yellow fever are diminishing. On October 15th the number of fresh cases reported were eight only, the lowest number since the first outbreak of the present epidemic. The fall has been as follows:—

October 1st to 5th . .	...	122 fresh cases
October 6th to 10th	...	108 ,,
October 11th to 15th	...	84 ,,

Panama.—Yellow fever has well nigh completely disappeared from Panama.

Lima, Peru.—Yellow fever cases were reported in Lima during September.

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THE

Journal of Tropical Medicine

NOVEMBER 15, 1905.

THE INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE AS APPLIED TO MEDICINE.

IN an excellent pamphlet Ch. Wardell Stiles, Ph.D., gives an account of the present International Rules of Zoological Nomenclature. The necessity for adopting some form of common International Code for all groups and for all countries has long been recognised, but it was left to the far-seeing judgment of Professor Raphael Blanchard, of Paris, to bring forward a satisfactory basis on which such a code could be established. Blanchard's proposal was adopted by the first (1889, Paris) and second (1892, Moscow) International Zoological Congresses, but it was not until the sixth congress (1904, Berne) that a sub-committee consisting of Professor Blanchard, Professor von Maehrenthal and Ch. Wardell Stiles presented the completed rules which now obtain. A permanent commission of fifteen zoologists now exists, as a deliberative

and advisory body, with Professor Blanchard as president and Professor von Maehrenthal and Dr. Stiles as secretaries, whose duty it is to protect the Code from the introduction of any revolutionary and ill-advised changes. Although neither the commission nor the congress has any power to force zoologists to adopt the International rules, there is a growing tendency to adopt the Code in order to prevent nomenclature becoming a complicated chaos of words. How necessary it is to have nomenclature regulated may be gathered from the fact that Ludwig in 1886 estimated that there were 312,015 known species of animals. This moderate estimate was exceeded by Ashmead in 1895 and by Howard in 1905, the latter calculating the total number of known and unknown species of insects alone to be between 3,500,000 and 4,000,000. Between 1880 and 1900 Waterhouse estimates that about 1,150 new generic and supergeneric zoological names were proposed annually. The necessity for some scientific basis of nomenclature is therefore abundantly evident.

Of the many articles of the Code several should be carefully studied by medical men resident in tropical countries, for to them occur opportunities of collecting and studying zoological specimens new to science. Article 2 of the Code states that the scientific designation of animals is uninominal for subgenera and all higher groups, binominal for species, and trinominal for subspecies. As Stiles explains, one of these names the generic name (corresponding to the family name or surname of persons), the other the specific name (corresponding to the Christian name of persons). Thus man as a systematic unit is known as *Homo sapiens*—*Homo* being the family name, say Smith, *Sapiens* being the specific name, say John. When a subspecies has to be indicated a third name is added; thus we have *Sus scrofa domestica*, the generic, specific and subspecific titles, meant to distinguish the domesticated hog from the *Sus scrofa*—the wild boar. Article 3 rules that the scientific names of animals must be words which are either Latin or Latinised. Article 4 states that the name of a family is formed by adding the ending *idæ*, and the name of a subfamily by adding *inæ* to the root of the name of its type-genus. In all cases the name of the type-genus is taken as the basis of the nomenclature and the endings *idæ* and *inæ* are added to the root of the generic name in question. Thus the tapeworms (*Tænia*) in man are classified as: Family *Tæniidæ*; Subfamily *Tæniinæ*; Genera *Tænia* and *Echinococcus*; the other subfamilies of this *Tæniidæ* are similarly indicated.

Article 8 requires that a generic name must consist of a single word, simple or compound, written with a capital initial letter and employed as a substantive in the nominative singular; and Article 13 has it that while specific substantive names derived from names of persons may be written with a capital initial letter, all other specific names are to be written with a small initial letter. Thus we may have *Rhizostoma Cuvieri* or *Rhizostoma cuvieri*, but for other than persons' names the species is always written with a small initial, as *Tænia lata*.

In the appendix it is noted that the proposition of every new systematic group should be accompanied by a diagnosis in English, French, German, Italian or Latin, and should state in what museum the type specimen has been deposited, and should give the museum number of said specimen.

The metric system of weights and measures and the centigrade thermometric scale are to be adopted as standard, and the micron (0·001 mm.) written μ is adopted as the unit of measure in microscopic work. The indication of enlargement or of reduction should be expressed in figures rather than by mentioning the system of lenses used.

Enlargement or reduction of an object is indicated usually by linear measurement; the multiplication sign being used for enlargement and the fraction for reduction; thus × 50 indicates that the object is enlarged 50 times, $\frac{1}{50}$ indicates that it is reduced to $\frac{1}{50}$ original dimensions. When it is desired *to specify* the enlargement is linear, the sign $\times 50^1$ is employed, when surface enlargement has to be indicated the sign $\times 50^2$ is used, and $\times 50^3$ when general enlargement is meant.

These are but a few of the provisions drawn

up by the commission entrusted with the International Code of Zoological Nomenclature as applied to Medicine, and the medical profession has to thank Dr. Stiles for his clear exposition of the details of a complicated subject.

Notes and News.

RISKS TO HEALTH IN THE TROPICS.—A lecture is to be delivered in the Anatomical Theatre, Cambridge, by Charles F. Harford, M.A., M.D., Principal of Livingstone College, on "Risks to Health in the Tropics." Dr. Harford is to deal with the subject in regard to its relation to Imperial expansion and missionary enterprise, and will bring forward a plea for reform. The lecture will be fully illustrated by lantern views. The Master of Trinity will occupy the chair.

DR. H. A. D. JOWETT has been transferred from the chemical research to the experimental department at the works of Messrs. Burroughs Wellcome and Co., Dartford, Kent.

INOCULATION AGAINST PLAGUE AT BELGAUM, INDIA.—The difficulties of fighting plague in India can only be understood by those who are acquainted with the life, opinions, and prejudices of the natives. It seems a simple thing to formulate regulations, but it is a very different thing to get them enforced. Neither public nor personal explanations can budge the ignorant native from the belief that all sanitary measures against plague are designed by the Government for the purpose of reducing the numbers of the population, or that they are carried out for a salutary purpose. It seems a simple thing to legislate against rats and to promise rewards for their destruction, but when the rat is considered sacred to a god it is a difficult matter to enforce the ruling.

Review.

REPORT ON PLAGUE IN CALCUTTA FOR THE YEAR ENDING JUNE 30TH, 1904.

The Municipal Department of the Government of Bengal has just published the Report on Plague in Calcutta for the twelve months ended June 30th, 1904. The report is presented by T. Frederick Pearse, M.D., F.R.C.S., D.P.H., officiating Special Health Officer of Calcutta, with appendices by W. C. Hossack, M.D., and H. M. Crake, M.B.

This important document seems to have been considerably delayed in reaching us. Where the delay occurred it is difficult to ascertain, for Dr. Pearse's report was submitted as long ago as July 12th, 1904, to the Corporation of Calcutta.

The outbreak of plague in Calcutta has been kept well in hand ever since its first appearance in the city, and at no time has the disease prevailed to the terrible extent observed in several other cities and districts of India. As time passes and experience increases the nature and epidemiology of plague becomes more clear, and the steady work and continued observation of the capable medical men on plague duty in Calcutta bid fair to elucidate many points which still remain obscure. The present report deals principally with the following points:—

(1) *The Seasonal Recurrences of an Active Period and of a Quiescent Period in Plague.*—Year after year the quiescent and active periods of plague ebb and flow with a regularity that borders on mathematical exactness. In this connection we can understand the ancients attributing influences, to solar, lunar, tidal, astronomical, or other influences, in their attempts to find an explanation for the appearance of certain ailments at certain seasons; for with the regularity of the rising and setting of the sun do the seasonal variations of plague recur.

For the half-year ended December 31st, 1903—the "quiescent" period—the deaths from plague generally numbered under 20, and never over 30 per week; for the half-year ended June 30th—the "active" period—the cases reported exceeded 50 per week. The exact period of the severe outbreak was from the sixth to the twenty-third week of 1904, when during these eighteen weeks 4,354 deaths from plague occurred out of a total, for the twelve months ended June 30th, 1904, of 4,909 deaths from the disease.

The second week of April, 1904, showed the highest number for any week during the twelve months; and although the outbreak of 1904 apparently developed a little later, and was less severe than during the three previous recurrences, the climax and the decline of the outbreak occurred at the same periods as in past years almost to a day. The dates, therefore, of activity and quiescence for the year in question correspond almost exactly with those of previous years, and this observation of seasonal recurrence and constancy in plague holds good not only in Calcutta but in every part of India, and in almost every country where plague has occurred in recent years.

(2) *Rat Mortality and Plague.*—In the wards of the city in which the cases of plague increased in numbers during the second week of February, 1904, at which period the outbreak began, the rat mortality suddenly increased and advanced *pari passu* with the cases of plague in human beings. With the decline of the disease in man the mortality in rats also lessened.

(3) *No Definite Focus of the Disease in Calcutta.*—It has been observed that neither during the quiescent period nor when the outbreak of activity is commencing is there any particular focus or centre from which the disease spread. The infection seems to remain general, and it cannot be said that the infection remained in certain places only. There is no evidence to indicate that when infection became wide-

spread it was due to human intercourse, for, as during the quiescent period the cases of plague appeared in a sporadic fashion, so during the outbreak the number of sporadic cases would merely seem to have multiplied, the numbers in every infected ward of the city increasing simultaneously.

(4) *Buboes.* — Accumulated experience seems to show that the presence of buboes in cases of plague is a feature of the disease during the period of active outbreak; during the quiescent period buboes are rarely met with. The absence of buboes in plague is apt to lead to confusion in diagnosis. Although notification of deaths in India is compulsory, the nature of the ailment that caused death is usually ascertained (guessed) by the description of the signs and symptoms given by the relatives. As these descriptions are at all times vague, and in many instances misleading, even approximate accuracy is impossible. Without buboes, plague is practically unrecognisable by the uneducated, and the municipal or Government authority to whom the signs and symptoms are related is apt to put down to plague all rapidly fatal illnesses attended by fever. To such an extent is this the case that Dr. W. C. Hossack, in his very excellent report, contained in Appendix B of the Report, remarks that during the quiescent period, owing to "over-reporting," many more cases of plague are reported than actually occur. Dr. Hossack writes: "In fact, it seems to me that for a period of two or three months the city is practically free from plague."

In the Report *pestis ambulans* is discussed in relation to true plague and to *pestis minor*. The writer regards *pestis ambulans* and *pestis minor* as synonymous terms, and considers them as sometimes used to indicate mild cases of true plague. That *pestis ambulans* is by its very name to be thus regarded is only right, but that *pestis minor* is the same disease as either true plague or *pestis ambulans* is more than doubtful.

There is much in this Report to interest and instruct. Dr. Pearse's able condensation of the enormous amount of detailed information to hand, Dr. Crake's admirable description in Appendix A of the work done in the No. 1 District of Calcutta, and Dr. Hossack's closely reasoned arguments in Appendix B, by which he arrives at logical and useful conclusions, are all of a high order of work.

The "Martin" Poison Bottle.

The makers claim that the "Martin" Poison Bottle is readily distinguishable even in the dark, from the facts that it will not stand upright but lies on its side, and that a deep indentation behind the neck of the bottle gives it a unique and unmistakable feature during handling. There can be no doubt the "Martin" is the most readily distinguished poison bottle ever produced.

Geographical Distribution of Disease.

As information arrives we publish, under this heading, the principal diseases met with in tropical and sub-tropical countries, so that those interested in the Geographical Distribution of disease may have a means of gathering information concerning the prevalent ailments in different parts of the world.

Panama.

ISTHMIAN CANAL.

The report of W. C. Gorgas, Chief Sanitary Officer for the Isthmian Canal, states that during May of this year among the 8,700 persons employed on the isthmus, the daily sick average was 300, equivalent to a constantly sick-rate of 34 per thousand.

Yellow Fever. — During May 31 cases of yellow fever occurred, with 7 deaths. The spread of the disease to doctors and nurses has been wholly prevented by excluding mosquitoes from the wards. When the new water supply is introduced, the storage of water near the former will be prevented, and the mosquito-breeding places done away with. At Colon and along the canal zone "mosquito brigades" are kept constantly at work, fumigating houses, covering water-barrels with wire netting, cleaning and grading imperfect ditches, cutting and burning grass and shrubs near dwellings, oiling tanks, water-barrels and cesspools. The effect has been a remarkable reduction in the number of Stegomyia and other mosquitoes.

The diseases of a tropical nature and the deaths they caused in the canal zone of Panama during the month of May were as follows: Beri-beri deaths, 6; dysentery, 5; malarial fever, 6; pernicious fever, 3; yellow fever, 7. The deaths from malaria do not in any way indicate the prevalence of the disease, for no fewer than 364 malarial attacks are recorded; the types of malaria were æstivo-autumnal, double tertian, quartan, triple tertian, single tertian, and hæmoglobinuric.

New Drugs.

ANTIKITO.—The Antikito Syndicate, Ltd., 6 Great Portland Street, London, W., after an extensive trial of antikito cream in many climates, are extensively advertising their preparation. They are perfectly justified in doing so, for as a means of warding off mosquito bites antikito has no superior. Mosquito brigades in towns and villages will, no doubt, in time prevent the ailments due to mosquito bites by carefully and rigidly destroying the breeding places of the mosquito, but it is beyond our fondest hopes to conceive a time when all parts of the earth shall be so drained that swamps shall be no more and that the mosquito will be wholly eliminated. It is, therefore, well to look facts in the face and to

encourage in every way we can the prophylactic measures at hand, whether it be quinine taking or protection by mosquito nets. The Antikito Syndicate seems to have provided yet another efficient prophylaxis. The syndicate has been in existence since 1896 and they have been testing the virtues of their antikito cream, not by chemical analysis merely, but by supplying their preparation to travellers and residents in some of the districts of the earth where mosquitoes and the diseases they communicate are most rife. The testimonies they have obtained are incontestable, but should the efficacy of their antikito cream be even a partial protection against mosquitoes and other baneful insects they have given us what might prove to be a comfort to many a traveller and tropical resident whose life has been worried and harassed, and the health impaired by these scourges of the Tropics.

MESSRS. BURROUGHS WELLCOME AND CO.—COMPRESSED SURGICAL DRESSINGS.—We have been favoured with specimens of "tabloid" compressed boric cotton-wool, carbolised tow, boric gauze, gamgee tissue, bandages and sanitary towels put up by Messrs. Burroughs Wellcome and Co. The compactness and convenience of these products are remarkable. For travellers and for tropical residents the small space necessary for transmission of these dressings and appliances must prove an immense boon.

ERGOTOLE.—Messrs. Sharp and Dohme, Manufacturing Chemists, of Old Swan Lane, London, have drawn our attention to this useful form of ergot. Any preparation that can ensure the speedy and efficient action of ergot will be welcomed, for whether in the fluid or solid forms in which ergot is placed on the market, they are at least doubtful in their potency, especially when they have to be carried over sea and up country in tropical climates. Ergotole is put up in sterilised bottles of one ounce each. Each minim represents the complete therapeutic value of 2½ grains of crude ergot. Ergotole may be used hypodermically, and owing to its ascepticity and concentrated strength is especially valuable in cases of emergency. The agents for Ergotole are Messrs. Thomas Christy and Co., 4, Old Swan Lane, London, E.C. The cost of the one-ounce bottle is two shillings.

Chloride of Zinc as a Deodorant, Antiseptic and Germicide. By T. B. McClintic.

The conclusions arrived at after a careful and prolonged investigation of the various attributes claimed for chloride of zinc, undertaken by Mr. McClintic on behalf of the United States Government, are as follows:—

Zinc chloride has some properties as a deodorant to recommend it favourably, but its antiseptic and germicidal powers are comparatively feeble, these negative qualities combined, its cost and caustic properties, practically eliminate zinc chloride from the useful and reliable disinfectants.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Journal of the American Medical Association," September 16, 1905.

Symptoms, Diagnosis, and Prognosis of Uncomplicated Intestinal Amœbiasis in the Tropics.

Musgrave, W. E., discusses this subject from experiences gained in Manila, under (1) latent and marked infections; (2) mild and moderately severe infections; (3) severe cases, including gangrenous diphtheric cases; (4) infection in children and in the aged. The keynote of his contention is that dysenteric lesions are due to the presence of motile amœbæ in the intestines. In the latent form their presence do not give rise to the typical or classical symptoms of dysentery. In the latent stage abdominal pains, indigestion, headache, coated tongue, foul breath, loss of appetite and of weight, and some yellowness of the skin, with occasional attacks of diarrhœa, may alone obtain; yet is there danger to life without the disease passing on to the blood and mucous states of true dysentery with tenesmus, fever, and extreme lassitude. If during the latent stage a purge is administered, mucus with active amœbæ may be brought away. Musgrave wishes to emphasise the fact that intestinal amœbiasis (amœbic dysentery) manifests itself in a much broader and more comprehensive clinical picture than is generally admitted. He further contends that waiting for bloody mucous stools to appear before making a diagnosis is fraught with danger to the patient. The symptoms produced by the presence of active amœbæ in the intestine are in no way proportionate to the damage done to the bowel.

"Semaine Medicale," September 13, 1905.

Malaria as a Possible Cause of Acute Peritonitis.

Gillot, V., gives details of a case of peritonitis in a patient in whom the malaria hæmatozoa were found in the blood. The symptoms disappeared when quinine was administered.

"Journal of the American Medical Association," October 14, 1905.

Entrance of Ankylostoma Larvæ by Way of the Skin.

Smith, Claude A., concludes from his experiments that infection in ankylomstomiasis (*uncinariasis*) can take place by way of the skin. He mixed a mass of fæces containing the eggs of the parasite with moistened sterile earth. In twenty-four hours when the eggs hatched and larvæ presented the mass was placed on the wrist of the subject experimented upon and allowed to remain for one hour. This proceeding was

repeated daily for five days, and only on the sixth application did the patient complain of local sensation. The skin became red and itching, the part swelled and large blebs appeared. By the middle of the sixth week after the soil was placed on the wrist ankylostoma eggs were found in the fæces of the subject experimented upon. The number of eggs increased in numbers during eight weeks, when thymol was administered.

Apparatus, &c.

Mosquito Boots.

Messrs. George Morris, 55 and 56, Bishopsgate Street Within, London, E.C., have submitted to our notice a boot intended to be worn as a prophylactic measure against mosquitoes biting the ankles and the feet. The boot is light and efficient, and will no doubt soon be included amongst the baggaged equipment requisite for travellers and residents in tropical countries. The patent hempen sole of the boots ensures coolness and also lightness for carriage and wear. The most common time of day to be bitten by mosquitoes is during the dinner hour, when the mosquitoes alight on the ankles, especially in the case of women. Some persons wear two pairs of stockings to prevent the mosquito biting, but the mosquito boot is much more effectual.

Philippines.

Manila health report for June, 1905:—

Population	219,941
Birth-rate	32·26
Death-rate	32·81

Chief causes of death, June, 1905:—

Typhoid fever	13
Intermittent fever	5
Malarial cachexia	2
Small-pox	1
Whooping cough	2
Dysentery	31
Bubonic plague	6
Leprosy	4
Other epidemic diseases	21
Tuberculosis	91
Cancer and other malignant tumours	4
Meningitis	27
Convulsions (under five)	103

Plague.

Peru.—The Plague Hospital in Mollando was closed on June 25th. The total number of cases treated was 125. Of these 49 died. Yersin's serum was freely used.

AWARDS AT LIÈGE INTERNATIONAL EXHIBITION.

The International Jury of the Liége Exhibition have conferred upon Burroughs Wellcome and Co: six Grand Prizes, three Diplomas of Honour, and three Gold Medals for the scientific excellence of their products, including

(1) "Wellcome" Brand Chemicals.
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(3) "Kepler" Preparations.
(4) "Tabloid" Brand Photographic Chemicals.
(5) "Hazeline" Preparations,
(6) Pleated Compressed Surgical Dressings.
(7) "Tabloid" Brand Medical Equipments, &c.

EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Médicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate. Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular. West Africa.

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3.—To ensure accuracy in printing it is specially requested that all communications should be written clearly.

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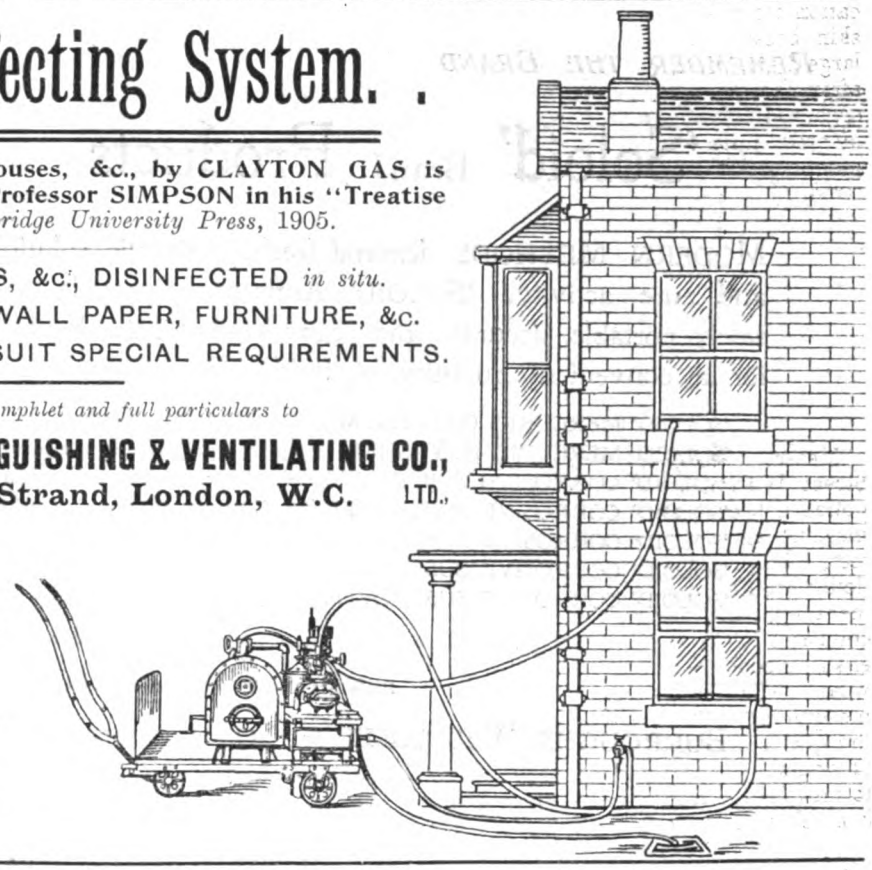
Clayton Disinfecting System.

Disinfection of Houses, &c., by CLAYTON GAS is recommended by Professor SIMPSON in his "Treatise on Plague."—*Cambridge University Press*, 1905.

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THE

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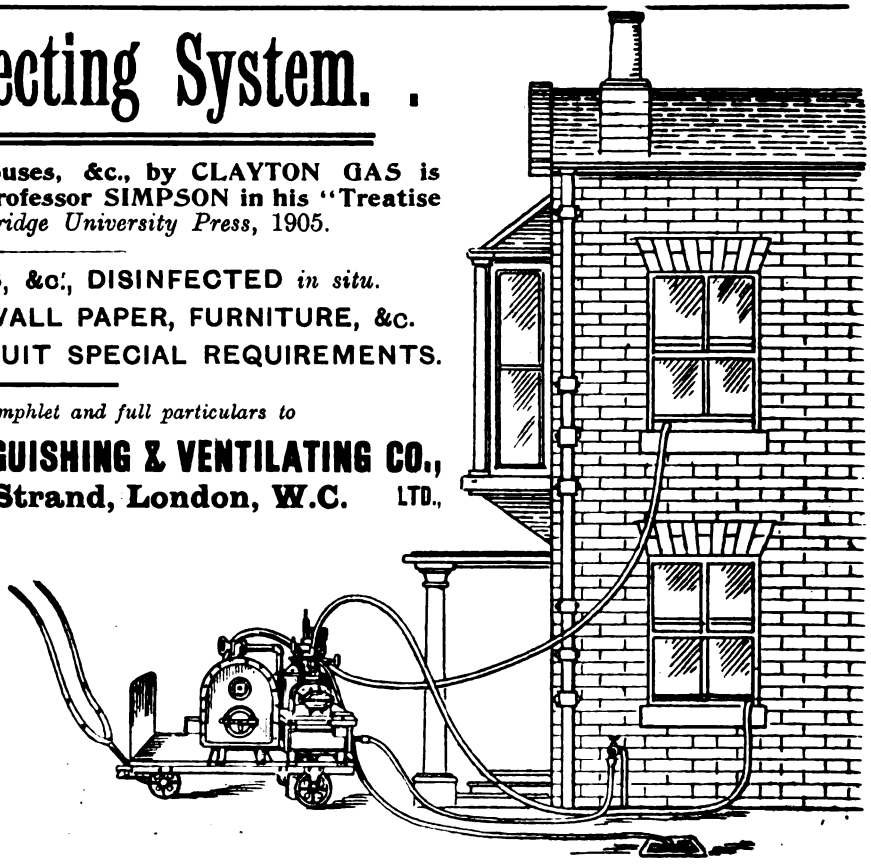
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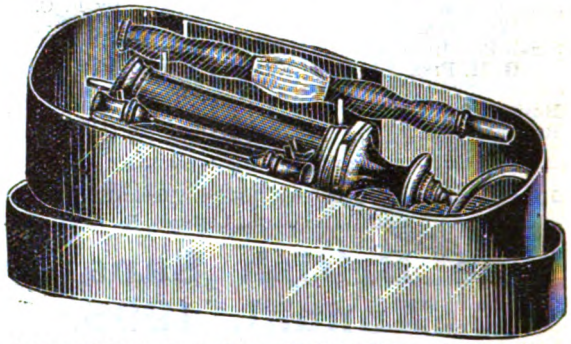
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Original Communications.

A NEW PROCESS FOR THE MICROSCOPIC DIAGNOSIS OF THE TINEA IMBRICATA.

By Ulysses Paranhos, M.D.

Physician to the Charity Hospital, and Assistant at the Pasteur Institute, of Sao Paulo, Brazil.

Tinea imbricata is a dermatosis produced by the *Aspergillus lepidophyton*.

It can be confounded with several other diseases of the skin, such as herpes circinatus, pityriasis roseus of Gilbert in its beginning, pityriasis marginatus, of Vidal, eczema sebaceus, and all the trycophiciæ.

The safest way to obtain the differential diagnosis is the microscopic trial made on *scales* from a contaminated individual.

By this trial the mycelial filaments of the *Aspergillus lepidophyton* can be observed with its segmented protoplasma, but rarely are the club filaments to be seen. It is only exceptionally that one can observe the typical aspergillus terminations described by Werner—mycelia of 1 to 2 μ thick, with ramifications uncoloured, and separated by segments.

The classical process for the microscopic trial of the tinea imbricata is the following: Immersion in alcohol ether, or a solution of potassium at 4 per cent., and colouring with a chromatic derivative of aniline, which differs according to authors.

After having multiplied the experiments, we succeeded getting a rapid microscopic process for the diagnosis of the tinea imbricata, which gave us results much neater and purer than all the other tests obtained by toluidine blue (Jeanselme), eosinated alcohol (Besson), nesuvine (Triboudean), and saponine (F. Noe).

The following are the technics of our method:—

(1) Bathe the suspected *scale* in essence of wintergreen during five minutes in a tube of essay.

(2) Proceed likewise, using the same method with *Roux-mixture*, absolute alcohol, and ether in equal parts.

(3) Place the scale in the following solution and during ten minutes:—

Common ammonia...	30 cc.
Distilled water	100 cc.

(4) Spread the *scale*, after dissociation, in the ammoniacal solution by means of a little glass rod on a lamel, fix it *a calore* and colour it with the infrachromatic mixture, and during ten minutes *a frigore*, having beforehand washed the preparations with distilled water.

Aniline blue (E. Merk)	1 gram.
Carbonated lithine	2 grams.
Distilled water	150 cc.

Mix up these different ingredients by shaking the liquid well; warm it in a water-bath (Bain Marie) during a quarter of an hour, keep in a bottle with emery cork during three days and in a stove at 37° C.

Correct the reaction to a weak alkalinity with a solution of acetic acid at 5 per 100, filter, and use it.

(5) The colouration being thus obtained, wash the lamel in a current water, dry it up with filter paper, treat it with neutral cedar oil, and observe it with an immersion objective.

Employing this method, which does not last more than a few minutes, one can obtain remarkable preparations with great neatness even when the parasites are not very numerous.

ON EUCALYPTUS OIL AS A VERMIFUGE IN ANKYLOSTOMIASIS.

By Llewellyn Powell Phillips, M.A., M.D., B.C., F.R.G.S., M.R.C.P.

Physician, Kasr-el-Ainy Hospital, Cairo, and Professor of Clinical Medicine, Egyptian Government Medical School.

In the summer of this year (1905), four male pigmies were admitted into Kasr-el-Ainy Hospital under my care for treatment, as they were found to be harbouring ankylostomata. They were somewhat anæmic, and three of them had enlarged spleens. I proceeded to treat them in the usual way with thymol, though not quite in the full doses on account of their small size, and the age of the smallest. The result of the thymol treatment was not good, as only two male ankylostomata were expelled from the four. Dr. Looss, the Helminthologist to the School, then drew my attention to a method of treatment described by Dr. Hermann, of Mons, in Belgium, as employed by him in the treatment of ankylostomiasis in miners, in which eucalyptus oil acted with the assistance of chloroform as a vermifuge. I accordingly tried it upon them, with the result that the first administration yielded 150 worms, and the second thirty more; they unfortunately left for England before a third dose could be given. After this striking result I determined to try the method in other cases, and during the summer I employed it at the hospital, not only on my own cases, but also on those of my colleague during his absence on leave.

Our previous routine method was as follows: After the patient had fasted during the day a gram of thymol was given him in cachet in the evening; the next morning the dose was repeated, and followed by a purge. But often the drug produced great depression of the heart, with slowing of the pulse, and artificial stimulation in the form of strychnine and strong coffee had to be resorted to, and fatal results had even occurred. The patients on thymol were, therefore, always a source of anxiety to the sister in charge and to the hospital orderlies, and much time was wasted in watching them. A safer method was, therefore, much to be desired.

The treatment now described fulfils, in my opinion, this requirement, and has been followed, when properly carried out, by very good results. I do not, however, consider it absolutely perfect, as there are *occasional* failures; but I am certain that it is more successful than thymol is, in such doses as can be given in safety.

Dr. Hermann described in his paper several methods of treatment with thymol, filix mas and eucalyptus, but concluded that the latter drug was the most successful; his formula was as follows:—

Eucalyptus oil	... ...	2·00 grams.
Chloroform	... ...	3·00 ,,
Castor oil	... ...	40·00 ,,

This formula I used at first, and then finding that no ill-effects were produced in many cases I increased the doses as follows:—

Eucalyptus oil	... ..	2·50 grams.
Chloroform	... ...	3·50 ,,
Castor oil	... ...	40·00 ,,

The following is the routine method employed by me now at Kasr-el-Ainy Hospital: About 6 p.m. the patient takes a saline purge (though this is not absolutely necessary, as for a long time I discarded it, though, perhaps, it is better not to omit it), and then fasts all night, and the next morning at seven takes half the above mixture; in half an hour's time he takes the other half; he is kept in bed, still fasting, until the bowels act. Should any depression occur after the first half of the drug, the second half is omitted. (This happened in the case of the youngest pigmy, who only took half the dose.) In young boys and feeble, anæmic patients the dose is divided into thirds, and given with twenty-minute intervals. The dose can be repeated every other day. This effects a considerable saving of time necessary for treatment.

As a rule, three to four liquid stools follow, though sometimes only one. Dr. Looss, who examined the stools in the earlier cases for me, told me that in the first stool there are no worms, and that in the first solid stool after the medicine has ceased acting there are also no worms. He found, further, that the worms are expelled alive; this may account for the absence of worms in the solid stools, as the worms may have time to recover and refix themselves.

Occasionally the first administration is not successful, though why I do not know, and again, very occasionally, after one or two negative results a few worms appear. This may be accounted for, in some instances, as Dr. Hermann suggests, by the fact that the worms having entered through the skin just before admission, not having reached the gut until after the lapse of some time, though in one case (which will be referred to again), a few days after an unsuccessful administration some worms were found *in situ* at the *post-mortem* examination.

The earlier cases were examined by Dr. Looss, but later I detailed a student, week by week, during the summer, to examine the stools. Unfortunately, however, owing to stress of work, on several occasions the stools were thrown away unexamined, and so the results are not quite so full as I should liked them to have been.

In forty-four cases it was wholly successful, as one or more further doses of the eucalyptus mixture yielded no more worms; in some, also, one or more doses of thymol were given with the same object and the same result. In twenty-one cases a single dose was sufficient, a single confirmatory dose of the eucalyptus mixture being given in fifteen, two extra doses in four, and in one, two doses of the mixture and two doses of thymol, with negative result. In four of this series thymol had been previously given before the eucalyptus was tried. In sixteen cases two administrations were sufficient, as confirmatory doses showed. In some of these, as already mentioned, the first dose was unsuccessful, and in several others the second dose expelled more than the first dose. In three cases three doses were necessary, and in four, four doses. One of these latter cases is very instructive. The first dose having expelled no worms, thymol was given twice with a negative result; he was then given eucalyptus five times; the first three of these expelled worms, whilst the last two doses yielded none.

In twenty-six other cases, including the pigmies, it was very efficient, but the patients left hospital before confirmatory doses were given; thus in one case, after seventy-six worms were expelled by the first dose, the patient insisted on going home. So whether these were completely cured or not is uncertain.

In the majority of cases, with the exception of a first administration, if a negative result was once obtained, further dosage expelled no more worms, except in the following instances. Salem Ismail, aged 20: the second dose expelled none, but the third expelled seventy-six and the fourth thirty-three, the fifth being negative. Ibrahim Said, aged 20: the fifth dose expelled none, but the sixth expelled six. Khalil Khalil Said Ahmed, aged 25, who was extremely weak and anæmic, took the eucalyptus mixture on July 22nd, with the result that forty-seven worms appeared; a further dose on the 26th expelled none. He died on the 29th, and twenty-one worms were found *post mortem*. (This case is not included with the successful cases above.)

In twenty-nine other cases the mixture was given in some for diagnosis and in some for treatment. In twenty-three no worms appeared; in five the stools were lost; in another thymol expelled two worms after two doses of eucalyptus had failed.

In three other cases the following results were obtained: In one, after the first dose of eucalyptus mixture, the stools were not examined, but a dose of thymol expelled thirteen worms; a second dose of eucalyptus yielded none. In another the first dose of eucalyptus expelled one worm, then thymol expelled four, and a further dose of eucalyptus five. In the third a dose of eucalyptus and a dose of thymol were unsuccessful, but a second dose of thymol expelled ten, and a dose of eucalyptus seven; a final dose gave a negative result.

The most successful cases were as follows: A first dose expelled 329 worms, a second none. In another the first dose expelled 270, in spite of previous dosage with thymol. In a third the first dose expelled 37, the second 300, the third none. In a fourth case the result of the first administration was not examined, but the second yielded 150, and two further doses none.

That the chloroform is essential is shown by the fact that in three cases where the ova were present chloroform water was given in error instead of chloroform, with a negative result.

Thus the treatment has been employed in 103 instances (the cases in which chloroform water was given being excepted), forty-four of which were entirely successful, in twenty-six efficient, in the other thirty-three either unknown or else negative, being employed in some for diagnosis, or else mixed treatment was adopted. In one, the patient who died, only partially successful.

I think, however, that it is obvious from a consideration of the above results that the treatment is satisfactory with reference to its vermifugal effects. Further, it is not unpleasant for the patient, the long fasting being unnecessary, and the taste of the mixture not offensive. It is cheaper, and repetition being possible three times a week, the stay in hospital is shortened. Lastly, the absence, or rather rareness, of cardiac depression as a result is a good feature. All these facts make it an advance in treatment.

As regards the dosage, if the patient be strong and fairly healthy, I give the larger dose, but if very young (twelve years of age, or so), or very weak, the smaller dose, given in thirds.

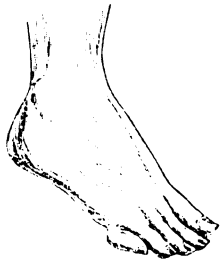
Oxyurides are freely expelled by it, and I have used it in one instance to expel a tapeworm, with success.

A CASE OF AINHUM IN ITS EARLIER STAGES.

By F. C. Wellman, M.D.

Benguela, West Africa.

One of the cases of ainhum which I mentioned recently in these columns came to me yesterday and I made a drawing of his foot. He is a young man about twenty years old, and in the best of health. The reason I have been interested in this case is that the process is of recent development, only dating from last wet season. It will be seen from the figure that the



toe has not entirely lost its original contour, and the nail is still intact. He states that the trouble (which is here called "Esola" or "Ombanja") began on the inner and plantar surfaces of the toe, and ascribes it to a fever he had about a year ago. The lesion as yet does not interfere with his walking, running, or carrying, as he is a good messenger and porter. He states that the toe sometimes aches at night.

NOTES FROM ANGOLA.

By F. C. Wellman, M.D.

Corresp. Memb. Am. Soc. Trop. Med.

(*Continued from p.* 328.)

Note XIII.—On the Absence of Certain Diseases from Southern Angola.

It is always a dangerous thing to venture statements as to the absence of any disease from a certain region, as the writer has proved, having had to report the occurrence of one or two affections which he had previously mentioned as probably not existing in his district. Still, the statement may be of value that in the course of somewhat extensive patho-geographical investigations, undertaken in 1896, 1899 and 1903, the following important diseases were not seen or heard of among the natives of this province, viz., typhoid fever, typhus fever, scarlet fever, measles, rubella, diphtheria, erysipelas, rheumatic fever, cholera, yellow fever, plague, Malta fever, pellagra, scurvy, anthrax, glanders, arthritis deformans, and gout.

Note XIV.—"Walking Cases" of Dysentery.

What seems to be amœbic dysentery may, in this part of Africa, be mild, chronic, or recurrent. I have seen cases of whites suffering from "chronic diarrhœa" who, with some effort, were able to be about their work, but in whose fæces might be seen numbers of amœba, morphologically identical with *A. coli*, and even small sloughs. Some months since I saw a fatal case of blackwater fever, supervening on the recrudescence of an old dysentery of this character. Amœbæ, which cannot be told from *A. coli*, are occasionally encountered in the stools of healthy persons here, and accepting (as the writer does) the view that amœbæ are the cause of this type of dysentery, one can understand that these lie ready to invade the intestinal mucosa whenever a favourable occasion presents itself.

Note XV.—An Insect which Preys upon Ticks.

Not long ago I sent to the British Museum an insect which I discovered in the course of some observations on *Ornithodoros moubata*, Murray, and its relation to human spirillosis. The insect is called by the natives "Ochindundu" (the striker), and feeds on the ticks mentioned, catching them and sucking, by means of its powerful piercing proboscis, the blood with which they have filled themselves—much in the same manner as bugs (*A. lectularia*) are hunted by a similar animal, which I remember having heard mentioned in my student days, but the name of which I have unfortunately forgotten, along with more important facts then learned. I have watched the "Ochindundu," and exhibited it to others, in the very act of feeding on the ticks. Its first two pairs of legs are provided with curious paddle-like structures, with which it securely holds the tick while mulcting it of its ill-gotten blood, the insect sitting, as it were, on its long hind pair of legs during this process. When the report on this queer assistant to the tropical sanitarian is received from the British Museum I shall ask the Editors to print it in these columns.

Note XVI.—Concerning the Prognosis of Blackwater Fever.

One occasionally hears from the laity (and even from medical men) such unscientific and meaningless statements in this connection as: "Dr. Blank has never yet lost a case of blackwater fever"; "All my cases recovered"; "Only two cases died out of twenty admitted to the hospital," &c., &c. According to the writer's experience with the disease in this colony there are two classes of patients. The first can endure almost any number of attacks (one hears of men who have suffered fifteen or twenty, or even more), but is unfortunately so small as to almost remain out of the account when making a prognosis. The other class, which includes the vast majority of cases, can usually stand one, or even two attacks, but often go during the third or fourth. Roughly speaking, *the danger increases in geometrical ratio with the number of attacks*. So (at least in this country) in making a prognosis in a given case, or in arranging statistics, it is of the first importance to take account of the number of previous attacks. In fact, I regard mortality statistics in this disease of little or no value without this qualification. The occasional very slight attacks, lasting only a few hours, which are sometimes sandwiched in between the grave attacks, are not a constant enough feature to seriously affect the above calculations. The writer's rule is to invalid home after each of the first two attacks, and to refuse to pass a man to go out after the second.

Note XVII.—A Point in the Life-history of Sarcopsylla Penetrans.

It is well known that the female chigger (*S. penetrans*), when pregnant, burrows into the tissues of her host, and swells up during gestation to a comparatively enormous size. While accurate accounts of the succeeding steps in the metamorphosis have been published, yet in medical literature the descriptions are often vague or erroneous. For instance, we read such statements as these: "The eggs are not deposited while the parasite is in the skin"; "The ova do not leave the body until the parent reaches the soil"; "The female bores into the skin and there deposits her eggs"; "The escaping larvæ give rise to ulcers," &c., &c. During the examination of large numbers of Bantu men, I have made the following observations on this stage in the life-history:—

(1) The eggs are always laid while the chigger is yet imbedded in the flesh of her host.[1]

(2) They never (at least in this climate) hatch into larvæ in the body of the parent.

(3) They are not laid at one time in masses but discreetly, and sometimes at considerable intervals, depending on circumstances. If the chiggers are in the sole of the foot, and the infected person walks about, the eggs may be seen dropping from his feet as he goes, or by pressing gently on the skin near a ripe chigger two or three eggs may be seen to escape one after another. Such eggs readily hatch out. So while it is doubtless a good rule to burn all chiggers removed, yet this has no effect on the usual mode of propagation, and so long as natives go about with infected feet the cycle will go on.

(4) The shell of the parent when dead, and empty of eggs, usually dries up *in situ* and causes no further trouble. Occasionally it may cause irritation, swellings and ulcers, but most of the abscesses, sores, &c., from chiggers come from removing the insects with septic instruments.

(5) The mature ova, if placed in a glass-covered dish containing some dust from the floor, go through the developmental stages common to all fleas, which have often been described. In natural conditions they develop in the dirt and cracks in the floor, and in chigger countries it is therefore important to compel one's native servants to keep their feet clear of chiggers, and to allow no other natives (especially children, who are always infested) in one's quarters.

Note XVIII.—A Clinical Classification of the Tropical Ulcers Seen in West Africa.

Most of the "ulcers" met with in this general region can be fairly grouped under the following heads:—

(1) Tropical phagedæna: (*a*) rapid, (*b*) subacute.

(2) Indolent ulcers.

(3) Malarial sores.

(1) *Phagedæna.*—I recognise two distinct forms of the disease—a severe and a mild—which I have called rapid and subacute phagedæna. Rapid phagedæna is a terrible affection, pursuing a relentless course through skin, soft tissues, and even bone, with frightful rapidity. Joints are disorganised in a few days or even hours, and a limb may become a putrid mass in an almost incredibly short period. It is fortunately rare. I have seen it once beginning on the cheek. Treatment is of no avail and death always results. The attempt of Le Dantec to identify tropical phagedæna with the hospital gangrene of temperate climates can hardly stand in view of the remarkable readiness and thoroughness with which operation wounds heal in the Tropics, and especially among blacks. I have never seen phagedæna or anything resembling it set up in operation wounds, even those made by native doctors with septic instruments. The subacute variety is that usually described in text-books, and is sharply differentiated from the above by its tendency to spontaneously arrest its course and set up granulations. Even in its initial spreading stage it is milder and slower than the preceding (although quite severe enough), and recovery is the rule. It may eventually assume a more or less indolent character.

(2) *Indolent Ulcers.*—The frankly indolent ulcers are often of this type almost from the beginning of their course. They may be active for a few days only at the commencement, and all angry symptoms subside while the sore is no larger than a shilling piece. It is this form which oftenest gives the history of dating from a small spontaneous vesicle (*vide* my note in the

[1] Her different behaviour after artificial removal does not form a real exception to these statements. In such an event she extrudes all her contained eggs at once and dies, but such eggs do not hatch into larvæ. Even if the chigger has completed her gestation and has begun to lay her eggs before her removal, only the most mature eggs in the posterior part of the abdomen will develop.

Journal for April 5th, 1905, p. 118), which I find was mentioned in connection with tropical ulcers by Bechtinger as far back as 1869. They may run on for years. I have seen them completely encircle a limb, although, as a rule, a "bridge" of sound skin is left free even in severe cases. A good many ultimately recover, especially if kept clean.

(3) *Malarial Sores.*—The last type usually appears as a small, definite, generally round, punched-out ulcer which I have called "malarial," because it generally heals quickly under the internal administration and local application of quinine. This peculiarity of the sore was first brought to my notice by Dr. Walter Fisher, of Northern Rhodesia. The name is not exactly fortunate, as the sores are quite possibly not all malarial in origin. This type would probably include the lesions described by F. Plehn, on the Tanga coast and other places. The type is not so constant as the others mentioned, as recent descriptions from different parts of Africa show. The ulcers are generally multiple, and of comparatively trifling importance. A local epidemic of sores in South Angola has been recently reported to me which, judging from a verbal description, also falls under this class. I need hardly say that the different types mentioned in this note may run the one into the other in various cases, and that the classification (which is entirely clinical) is not put forth in a dogmatic spirit, but only as a suggestion to those working on the subject.

(To be continued.)

ON A SPIROCHÆTE FOUND IN YAWS PAPULES.

By F. C. Wellman, M.D.
Benguella, West Africa.

Several weeks ago I sent a communication to the American Society of Tropical Medicine, in the course of which I wrote as follows: "Some time ago while examining a scraping from a yaws papule I was somewhat surprised to see under the $\frac{1}{12}$ several active spirilla-like bodies which, in form and movement, closely resembled *S. obermeieri*. Thinking it to be a case of the parasite of relapsing fever, I thereupon made a prolonged and careful examination of the blood, which, however, contained no spirochætæ. I found the parasites in other papules of the same case.

Only yesterday there reached me the report of the meeting of the British Medical Association at Leicester, which mentions a paper by Castellani,[1] announcing the demonstration of spirochætæ in two cases of yaws in Ceylon. In view of this statement of Castellani's I am emboldened to add the following details from my medical diary to the observation quoted above. I had felt (in view of my failure to find the spirochæte in several subsequent instances) a natural diffidence in submitting the slender evidence of one case; but on reading the paper mentioned I have thought it worth while to call attention to what may be now regarded as a confirmation of Castellani's observation.

From an entry in my diary, dated July 14th, 1905, I extract the following notes: The case was seen during an expedition into Chiyaka district, South Angola. The patient was a girl about twelve years old, who showed a plentiful and characteristic yaws eruption on her face, chest, back, forearms and nates. Having several years ago made an attempt at solving the bacteriological problems connected with yaws, I had at first no thought of examining the secretion from the sores, but unpacked my microscope with the intention of having a look at the girl's blood, as I was in a new district, and such opportunities were rare, owing to the suspicions of the natives. Having gone over two fresh films with no result except a pigmented leucocyte, I was about to replace the instrument when, as my porters were resting, it occurred to me to examine a scraping from one of the papules. On doing so, I at once noticed under the $\frac{1}{12}$ several motile spirilloid bodies which puzzled me, as the natural inference was that I had to do with a case of "tick fever," the parasites of which I had overlooked in my two previous blood examinations. I therefore re-examined the blood with great care, but found no spirochætæ. Making scrapings from two other papules, however, I readily found spirochætæ in both preparations.

I have since carefully examined three more cases of yaws from the same district, with negative results.

I publish this note to obviate any misunderstanding that might arise from the tenor of the paper calling attention to my independent discovery of this organism in yaws papules, which was on its way to America before Castellani's announcement reached me. It is significant that this observation (which has been spoken of as "one of the most important discoveries of recent times, considering the fact that the *Spirochæte palida* has been found, by Schaudinn, in syphilis, and considering the relation said to exist between yaws and syphilis"[2]) should have been almost simultaneously made in two such widely separated countries as Ceylon and West Africa. It is to be hoped that observers in all parts of the tropical world will avail themselves of every opportunity to thoroughly investigate the matter.

I am also publishing a statement similar to the above in America.

SYMMETRICAL PENDENT KELOIDS OF THE EAR.

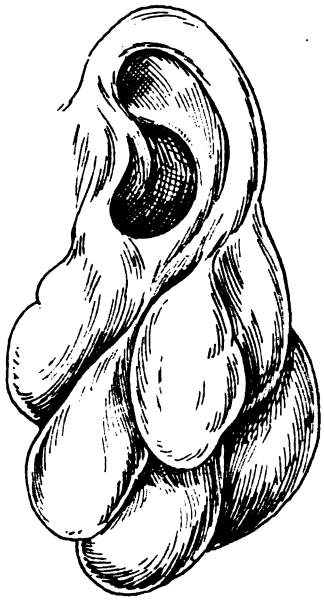
By F. C. Wellman, M.D.
Benguella, West Africa.

I send you a drawing of the ear of a Bantu girl, from which hung a six-lobed keloid, somewhat different in shape and arrangement from any that I had previously seen. As a rule the lobes composing such growths (which are extremely common among the Angola Bantus) are asymmetrical, and often the broadest axis of each lobe is at right angles to its

[1] "On the Presence of *Spirochætæ* in Two Cases of Ulcerated Parangi (Yaws)." Abstract in the *Journal of Tropical Medicine*, August 15th, 1905, p. 253.

[2] *Brit. Med. Journ.*, August 5th, 1905, p. 282.

pedicle. When sessile, and on the trunk, the growths not seldom show a tendency to spread horizontally. In the present case, however, the growth is remarkably regular in outline, the lobes are all ovoid and



nearly uniform in size, their long axes correspond both with each other, and with that of the whole tumour, and the resulting *ensemble* is strikingly suggestive of a small bunch of Madeira grapes.

SMALL-POX INOCULATION IN INDIA.

By Major G. H. Fink, I.M.S., M.R.C.S., L.S.A.(Lond.).

(*Continued from p.* 335.)

I was about to move away when he caught me by the arm, and said: "Here are my children; take and vaccinate them."

I vaccinated his two children then and there, when there was a great rush from all parts of the villages round about to be done, and as fast as I and my superintendent could operate we did so, and thus broke down a barrier which had been set up for years. Are our anti-vaccinationists not very much in the same position to-day?

It is my opinion, therefore, that in the East, among an intelligent people who are willing to reason with you, you must let them have their own way as a matter of experiment, but show them what your duty is, and what the orders of Government are which you are there to carry out, whether right or wrong; and if prevented, the Government should know the reason why their orders are disobeyed. This is clearly our position of the matter, as we cannot possibly do more. We have done all in our power, and the rest is in the hands of the authorities who move the machinery.

In a country such as Sibsagar, where the Assamese are a cleanly people generally, there is very little chance of small-pox epidemics breaking out unless either imported or produced through inoculation. The imported epidemics are through immigrants from congested areas in India coming to enlist in the tea-gardens as coolies, and in a state of poverty and filth in a large number of cases; hence the danger of small-pox in a district depends upon this as one cause and a very common cause, and it is, therefore, very necessary for tea-garden doctors to co-operate with the civil surgeon to so organise the vaccination as to make it impossible for coolies to bring it into a district in Assam. I would, therefore, strongly urge, from the experience I have had, that all coolies be vaccinated before being allowed to enter into Assam, and not after their arrival at the coolie depôts or tea-gardens. This is only fair to the people of Assam, and fair to the medical staff who are short-handed, and fair to all of us who are consumers of tea.

Creative small-pox epidemics, that is, epidemics which occur through inoculation methods, though perhaps not so grave a danger, yet are a danger; hence it is quite right that stringent regulations and laws should be framed to put a stop to this practice for the good of the whole community. It wants knowledge of the people and tact to break down such barriers; but it must never be forgotten that an old custom suddenly broken down, even by reasonable arguments, leaves a sting behind in the case of certain gentlemen of a peculiar temperament, who are the *paterfamilias*, as it were, of the whole community; hence, it is the duty of Government when they frame a rule or law on the subject, to support civil surgeons and to see that the rule is given effect to, and not, as unfortunately does sometimes happen, let those who are charged with this right duty suffer for carrying out an order effectively, which in the case of the Indian medical officer is the receiving of a commission, and he gives his word to obey the orders of the Government, whether that commission designate him as "Surgeon," "Doctor," "Surgeon-Captain," or "Captain."

Misrepresentations there will be, together with plausible arguments on the other side; but these need enquiry into and sifted if we are to be allowed to do our duty as medical officers trained in the schools of England.

I maintain if the Government find that they cannot support their Civil surgeons and Health officers through a difficulty in which these officers have risked even their lives rather than flinch from duty by obedience to an order of superior authority, it is time that a Minister of Health were created for India and the Colonies respectively, who would be responsible for all measures of health to the Prime Minister and the Cabinet, so that laws and regulations will be given effect to properly in matters of disease, and by allowing selected medical officers a seat on the Council of the Viceroy and his Governors and lieutenant-governors who desire to carry out the wishes of the Government, all measures relating to health and disease would receive the best attention possible, and be reported carefully from their scientific aspects through such local councils to the responsible head of the Govern-

ment, and thence through him to the Minister of Health for the information of the Cabinet, and evil practices, which endanger the world, checked. We should by such measures be able more correctly to gauge where the responsibility lies for the carrying out or the cancelment of certain orders when they should be strongly supported, whereas, it is impossible to do so if the wheels of the machinery are allowed to revolve often in opposite directions, as sometimes does occur; while in the multitude of voices, frequently, there is no proper counsel on grave questions of health and disease either given or accepted and then, when grave epidemics come, the doctors and surgeons have the burden and heat of the day to bear to check it, and very little to encourage them in their work of research.

In dealing with the question of the army of micro-organisms, it is just as important that an organisation should be as complete as in the case of an army of soldiers. Is our medical organisation in every respect what it should be in India? I say most emphatically it is not, although it is a trifle better than it was a few years back.

The reproach often thrown out against the medical department is, that it does not yield a revenue as some of the other departments, hence there is not that interest taken by the Executive in its work. Certainly we are not money-making machines, nor do we seem to be money-taking ones. To obtain that revenue it is necessary to have healthy labour forces, and to obtain a greater revenue for any country at the present time of competition, the labour forces of our Empire must be healthier year by year, and the torch of education in Science must be kept burning for the good of Science. All scientific work of value to commerce should be turned towards Scientific Schools of Education, and Research work encouraged, and such a torch should ever burn in our Empire as was never seen before.

Have we endeavoured to make the medical a revenue-producing machine? If every man were taxed heavily for bringing in dirt and disease we should soon increase our revenue.

To have an army as an efficient fighting machine we require healthy, strong men, well disciplined and drilled in the art of fighting, and for this the people have to pay a large price, and it seems necessary. To have an army for revenue-producing purposes in a healthy way and free from taint we need an army of healthy labour forces at work, working healthily for the good of all. Whose duty is it to see to this? Why, the medical department of the Army, Navy, and the Civil branch of our empire, who must work to save us from reproach, and point out the real evil of inoculation. We can but represent our case, and show the disastrous consequences of the economic machine which shears the medical department year by year, and it rests with the Government to either court disaster, or to help us through our troubles by meeting us at any rate half-way, since we do not flinch from out duty because of the dangers ahead, nor do we discourage people in their worship of any gods if they will only let the medical department do their work according to the light of science, and the testimonies of time and experience which have shown us clearly the history of inoculation among an ancient people, wise in their methods for the times gone by; but which in these days of progress and enlightenment should accept what has been proved by good old Jenner and his followers, who mean to stick to him as the cowherds stuck to their duty bravely at Bristol amid the small-pox which laid low their fellow-men, and who though inoculated in their fingers with the cow-pox from the teats of milch cows, were saved from the terrible ravages of small-pox. No greater experiment for the good of mankind was accidentally produced as at Bristol in the days of Jenner whom we revere now, as much as the cow which is sacred to the Hindoos.

"Journal of Cutaneous Diseases, including Syphilis," October, 1905.

PINTA: PANO BLANCO. P. G. WOOLEY.

Trichophytic diseases are common in Manila. The case is reported of a boy who exhibited slowly spreading pinkish-white patches, irregular in size and shape, on the ankles, dorsa of feet, shins, knees, elbows, hands, wrist, and one on the right shoulder. The patches were roughened, slightly infiltrated and scaling; there was some itching. Scrapings showed mycelial filaments, usually long, ending in a bunch of spores (? penicillium). The condition is identical with pinta, and with the cases of Segram in North Africa, and of Sandwith in Egypt. The presence of sensation and itching exclude leprosy, the colour and odour of the patches insure a correct diagnosis. T. P. B.

"La Tribune Medical," November 4, 1905.

MALTA FEVER IN ALGERIA.

J. Lemaire finds that there is often confusion between this and other prolonged febrile conditions, when there is enlargement of liver and spleen, with anæmia. He considers it of frequent occurrence, having seen thirty cases in five months. In nine cases where 2 to 4 cc. of infected blood were mixed with 250 cc. of pure blood, a pure growth of *Micrococcus melitensis* was obtained. In addition to the tests of Widal and Wright, he injects the expectorations into guinea-pigs, which do not suffer in general health, yet their blood agglutinates the bacillus of Malta fever. T. P. B.

"La Grèce Médicale," January, February, March, 1905.

MALARIA AND HEART DISEASE.

Tsiantaphyllides discusses the connection between the two diseases, and shows that malaria is often the cause of heart disease. Sometimes the cardiac lesion is trivial, at others it is serious, and refuses to yield till active treatment is directed to the malaria. A matter of great importance in practice is that the valvular lesions may be permanent. The chief effects of malaria on the heart fall on the muscular tissue and the valves of the left side, but all parts may be effected. T. P. B.

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THE

Journal of Tropical Medicine

DECEMBER 1, 1905.

APPEARING AND DISAPPEARING MEDICAL SCHOOLS.

IN England at the present moment there is a dislocation of medical teaching which is having a serious effect upon many London schools of medicine. In England in the north, the west, and the midlands, universities have within the last few years sprung into existence, and it would seem likely that every large city will soon have its own University. In Scotland there were five universities up to the year 1860, but after the fusion of the two universities in Aberdeen four have been found sufficient to satisfy the insatiable appetite of the Scotch for education. England is now following the example of Scotland and establishing well-equipped universities in the larger centres of population. The people have rebelled against the "universitism" of Oxford and Cambridge; they desire education and instruction in the special sphere they have chosen for their work in life. The University of London first raised the standard of revolt some sixty years ago, but the University of London was, and is, a mere examining board; and so far as medicine is concerned, an exalted combination of the examining boards of the various corporations of so-called colleges of physicians and surgeons in London, Edinburgh, Glasgow and Dublin. The spirit of municipality has, however, grown rapidly of late, and the glamour of the old-established seats of learning, and of the value of diplomas granted by examining boards has fortunately, or unfortunately it may be, fallen away.

The creation of universities in Sheffield, Leeds, Manchester, Liverpool and Birmingham is responsible for the reduction of the numbers of medical students in the London schools. Some of the schools have sent their pupils elsewhere, and several more are threatening to close their doors.

Increase of expenditure is proving the real cause of these schools' difficulties. When the examining boards demanded that the teachers of anatomy and physiology should be pure anatomists and physiologists the days of the smaller schools were doomed.

The London schools could not afford to pay salaries for eleven or twelve anatomists and physiologists without State aid; and as that was not forthcoming amalgamation was imperative, involving the disappearance of several of the less endowed schools.

POST-GRADUATE TEACHING.

Post-graduate instruction has become the subject of the hour. Medical men in practice demand it, as proved by the large daily attendance at the Post-Graduate College—the Polyclinic—and at the West London Hospital. Other schools are organising post-graduate teaching, and every London school that has fallen behind in the race is discussing the matter.

St. George's Hospital having dropped student teaching is now asking for a large sum to establish a post-graduate school, but the latest and

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SELECTIONS

FROM

COLONIAL MEDICAL REPORTS.

DECEMBER 1, 1905.

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Colonial Medical Reports.—No. 15.—The Straits Settlements (*continued*).

CHOLERA.

There were 226 cases in Singapore with 190 deaths, but none in the Settlements. The outbreak was not so severe as that of the previous year. Five cases occurred in the Lunatic Asylum, three proving fatal.

SMALL-POX.

The cases in all the Settlements were a continuation of the previous year's outbreaks, and in Province Wellesley and Malacca far exceeded those of 1902.

Several cases where the persons responsible had failed to report occurrences of small-pox were prosecuted by the Municipality in Singapore and heavy fines imposed. In Penang the Colonial Surgeon reports that no less than twenty cases were discovered after death.

ENTERIC FEVER.

One hundred and forty-eight cases, with 47 deaths, were reported in Singapore, of which 103 were treated in hospital, with 46 deaths. One hundred and forty deaths are reported from Penang, and only three cases appear to have been admitted in the Malacca hospital—two of these died. Reliable statistics from enteric fever cannot be obtained unless the cases are admitted into hospital or attended to by qualified medical practitioners. Although all dead bodies within municipal limits are inspected after death, to diagnose a case of enteric properly after death, except by *post mortem*, is difficult.

MEASLES, &c.

A few cases of measles, dengue and chicken-pox were reported in each of the Settlements. Three cases of diphtheria were treated in hospital in Singapore.

BERI-BERI.

(6) There were 1,919 admissions into hospital with 647 deaths, against 1,901 admissions and 575 deaths in 1902. The total number of deaths from this cause registered in 1903 was 1,729, and in 1902 it was 1,607. Although these figures are not so high as that of 1901, when the number registered was over 2,000, yet they show that beri-beri still contributes a high percentage in the mortality rates.

An interesting report by Dr. Leask on the existence of beri-beri in the prison at Singapore accompanies his report on the prison sanitation.

VENEREAL DISEASES.

(7) The admissions to all the hospitals from venereal diseases for 1903 numbered 1,818, with 96 deaths. It is satisfactory to notice the appreciable decrease in these figures as compared with those of the previous two years, which were 2,341 admissions with 90 deaths, in 1901, and 3,149 admissions with 171 deaths in 1902.

Of the admissions in 1903, 1,632 were males and 186 females, of whom 152 were prostitutes.

SANITATION.

(8) The general condition of the Colony, so far as the Municipalities of Singapore, Penang, and Malacca are concerned, may be considered satisfactory. The special feature in Malacca is that no outbreak of cholera has taken place there since the Municipal water supply was established.

At Butterworth sanitation has been much improved during the year; great activity is being shown in the substitution of brick buildings for atap houses. Improvement is also reported in the other districts.

(9) All the reports from the hospitals in the Colony, excepting Butterworth, state that the quantity of water supplied was unlimited and the quality was good.

HOSPITALS AND WORK DONE.

(10) The total number of admissions into the hospitals during 1903, excluding the Lunatic Asylum, was 23,150, against 25,624 in 1902. Excepting in the Tan Tock Seng Hospital and Quarantine Station in Singapore, the Leper Asylum at Pulau Jerejak, the District Hospitals at Butterworth and Bukit Mertajam in Province Wellesley and Jasin in Malacca, the admissions into the other hospitals have decreased.

(11) The subjoined table shows the work done for the last three years.

(12) The diseases responsible for the greatest number of admissions and deaths are shown in the subjoined Tables, compared with the corresponding diseases and deaths during 1902.

POISONS.

(13) There were 126 admissions, with six deaths, as follows:—

	Admissions.	Deaths.	
Opium	14	5	
Mercury	11	—	
Carbolic acid	1	—	
Alcohol	66	—	
Ammonia	1	—	
Stramonium	11	—	
Dog-bite	14	—	(Penang)
Opium habit	14	—	
Morphia habit ...	4	—	
Ptomaine	1	1	(Malacca)
Hydrargyri perchloride	2	—	

	Number of Patients Treated			Number of Deaths			Percentage of Deaths to Total Treated		
	Europeans	Asiatics	Total	Europeans	Asiatics	Total	Europeans	Asiatics	Total
(*a*) 1901	1,094	26,401	27,495	73	3,943	4,016	6·67	14·93	14·60
(*b*) 1902	1,159	26,515	27,674	68	4,406	4,474	5·86	16·61	16·16
(*c*) 1903	1,043	24,324	25,367	45	3,911	3,956	4·31	16·07	15·6

OPERATIONS.

(14) Eighty-nine operations were performed. There were nine deaths. This does not, however, give an idea of the amount of surgery that is done, especially at the General Hospital, Singapore, in connection with the treatment of cases classified under other headings. At the General Hospital, Singapore, alone, 200 such operations were performed.

(15) As requested by the Committee of the Cancer Research Fund, two sealed bottles were sent to the epidemic. It is satisfactory to learn that beri-beri is showing signs of dying out.

With the increase in the number of patients in the asylum the industry in manufacturing cloth has also enlarged. It is a pity that there is no land available for cultivation.

(17) The health of the prisoners and police force shows an improvement in 1903 over that of 1902.

(18) There was an increase of work in the Maternity Hospital, Singapore. Nearly 50 per cent. of the

I.—GENERAL DISEASES.

Diseases	1902		1903	
	Admissions	Deaths	Admissions	Deaths
Dysentery	866	262	707	267
Malarial fever and cachexia	2,938	277	1,647	139
Beri-beri	1,901	575	1,919	647
Phagadæna	200	45	234	60
Tubercle of lungs	699	355	730	408
Venereal diseases	3,149	171	1,818	96
Rheumatism (acute and chronic)	436	..	1,075	..
Anæmia	761	197	964	262
Debility	926	272	907	339

II.—LOCAL DISEASES.

Diseases	1902		1903	
	Admissions	Deaths	Admissions	Deaths
Diseases of the nervous system (including admissions to the Lunatic Asylum, less cases transferred there from other hospitals)	675	113	736	112
Diseases of the respiratory system (not including phthisis)	915	271	574	108
Disease of the digestive system (including diarrhœa)	2,367	682	2,028	678
Disease of the skin	2,155	5	2,626	4

III.—INJURIES.

	1902		1903	
	Admissions	Deaths	Admissions	Deaths
General and local	1,521	54	1,557	56

Superintendent, Victoria Embankment, London. One contained three small portions of a malignant growth removed from a patient at the General Hospital, Singapore, and the other cystic kidneys removed from a patient at the Tan Tock Seng Hospital. Notes of the cases were sent together with the respective bottles. Copies of the notes were also sent to the Colonial Office.

(16) The report on the Lunatic Asylum by Dr. Ellis shows that the recovery rate for 1903 was not so good as in the two previous years. Five cases of cholera took place among the female lunatics, three of which proved fatal. Prompt action in removing them to the Pasir Panjang ward at once stopped the inmates were natives of India. No Malay women appear to go to this hospital, but the Chinese are beginning to come to it.

No probationer passed out from this hospital in 1903.

(19) The Colonial Surgeons, Province Wellesley, both report a decrease in the number of coolies engaged in the different estates, and as a natural consequence the number of coolies treated in hospital has decreased. The general health has improved.

(20) After a great deal of correspondence for some years the Government has decided to remove the Tan Tock Seng Hospital to a more healthy site.

Quarantine.

(21) The work in this department, both in Singapore and Penang, still continues to be heavy. No less than 424,940 passengers were examined on arrival, and 12,991 pilgrims on departure.

One hundred and thirty-six cases of plague were landed on the Quarantine Station at Singapore, and considering the close proximity of the town to this place and that not one case has taken place in the town from amongst the passengers landed, great credit is due to those in charge of this branch of the department for their vigilance and care in carrying on their arduous and responsible work.

Much needed improvements were carried out on St. John's Island, and the staff has been increased to cope with increased work, and so ensure greater efficiency.

Out-door Dispensaries.

(22) All the returns from the three principal dispensaries and those attached to the District Hospitals, except Butterworth, show increased work.

Eighteen thousand and twenty-nine persons were treated during the year, with an average daily visit of 150. I think that in Singapore there is room for another out-door dispensary in the Chinese part of the town; in any case, should the Government at any time take up the question of restricting unqualified private practice, the preliminary steps would be the starting of more out-door dispensaries.

Vaccination.

(23) The total number of vaccinations performed throughout the Colony during 1903 was 15,496, against 14,747 in 1902. The number of births registered in 1903 was 15,509, which shows that very few children (if any) remained unvaccinated. Of course, the number vaccinated includes adults, but these are comparatively few, and there are many children who die before being vaccinated.

The subjoined table shows the number vaccinated, with the results in the several Settlements.

These numbers do not include the vaccinatione performed at the prison or quarantine station. The number in Singapore includes 1,547 cases performed by licensed vaccinators. Although Saigon lymph was used in all the Settlements, the return shows that the best results were obtained in Singapore. This points to the conclusion that the cause of failures cannot be attributed solely to the bad quality of the lymph received sometimes. The percentage of failures was highest in Malacca, namely, 20·53. The Colonial Surgeon, Province Wellesley, attributes the failures there to carelessness of the vaccinators.

Settlement	No. of Vaccinations Performed	Result				
		Perfect	Modified	Failed	Unknown	
Singapore	2,738	2,733	..	5	..	(a)
	1,337	1,258	2	36	41	(b)
	210	195	..	14	1	(b)
Total	4,285	4,186	2	55	42	
Penang	3,419	2,068	541	562	248	
Dindings	145	129	5	7	4	
Province Wellesley	3,688	2,933	277	467	11	
Malacca	3,959	2,740	199	813	207	
Total	15,496	12,056	1,024	1,904	512	

(a) By Government Vaccinator. (b) By Licensed Vaccinators.

Report on Principal Diseases in Singapore Prison.

By Dr. J. Leask.

Colonial Surgeon in Charge.

(1) The diseases accountable for the greatest number of admissions to hospital were:—

Beri-beri, with 169 cases, as against 415 in 1902; fevers, with 168 cases, as against 188 in 1902; diarrhœa, with 112 cases, as against 186 in 1902; dysentery, with 104 cases, as against 156 in 1902; minor injuries, with 69 cases, as against 87 in 1902; eye diseases, with 57 cases, as against 31 in 1902; dyspepsia, with 43 cases, as against 66 in 1902.

Beri-beri.

(2) One hundred and twenty-five of the total of 169 cases of beri-beri were admitted during the last quarter of the year. During the first nine months of the year there had only been 44 admissions.

(3) The number of deaths during the last quarter was 14, out of a total of 16 for the whole year.

It has been noticed in previous years that the greatest number of admissions occur in the hot months

of May, June and July, and in the last quarter of the year. (See Table A.)

(4) Heat and moisture are favourable for the proliferation of micro-organisms, and this may account for exacerbations of beri-beri at these times, the proper degree of temperature on moisture being attained then.

(5) This will not always account for those sudden changes of activity which take place at times. The disease may slowly or suddenly disappear and reappear at varying periods in the same way, and I think a possible explanation of these changes may lie in the supply, outside the human body, of pabulum to the micro-organisms, or there may be an accumulation of excretory products of the organisms themselves. The organisms may proliferate so rapidly that they exhaust the available supply of pabulum, and become quiescent until a further supply of pabulum is again available, or a favourable environment is attained.

(6) The passage of thus weakened micro-organisms through the human intestinal tract would intensify them, therefore too much importance cannot be attached to the proper disinfection of motions.

(7) At other times it would appear that the disease had been got thoroughly under. As mentioned in my report of 1898, there was no beri-beri in the prison for twelve years from 1885 to 1897, except two outside cases.

(8) The present outbreak began in 1897, the first case being in a prisoner eighteen days after admission to prison, the second thirteen weeks, and the third six days after admission.

(9) The incubation period of beri-beri is not known, Pekelharing makes it as long as five weeks, but it would be reasonable to allow that Nos. 1 and 3 were already in the incubatory stage of the disease, and possibly No. 2 also, and it may well be granted that the disease was introduced into the prison by these men, and has now become endemic, and has been from the beginning, the cause of 1,319 admissions and 67 deaths (5·07 per cent. of deaths).

(10) Many writers have advanced the theory that beri-beri is caused by diseased rice. The experiments made by Dr. Hamilton Wright in feeding prisoners on sterilised rice has exploded this; and that the diets of the prisoners could have nothing to do with the production of beri-beri was clearly shown in 1898, when a number of prisoners suffering from beri-beri were sent over to St. John's Island from this prison.

TABLE A.

TABLE SHOWING THE INCIDENCE OF BERI-BERI IN THE DIFFERENT GRADES.

Grade	1897	1898	1899	1900	1901	1902	1903
Upper		7	6	9	13	19	9
Middle		94	123	105	55	129	37
Lower		8	6	40	40	102	27
Short-sentence	3	12	23	52	102	136	88
Revenue		3	6	8	7	19	5
Civil prisoners			1	2	2	10	3
His Majesty's pleasure				1			
Females				7			
Total	3	124	165	224	219	415	169

TABLE A.—*(continued)*.

TABLE SHOWING THE ADMISSIONS AND DEATHS FROM BERI-BERI IN EACH MONTH DURING THE LAST FOUR YEARS.

	1900		1901		1902		1903	
	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths
January	5		15	1	22	1	22	2
February	3		10		8	1	6	
March	1		4		2		6	
April	8		17		8		3	
May	14	2	25	1	18		1	
June	32	2	17	3	79	3	3	
July	36	2	23	2	86		1	
August	8	1	12		27			
September	32	1	10		26	3	2	
October	24	2	19	1	62	1	7	
November	44	7	41	1	35	1	53	6
December	17	11	26		32	1	65	8
Total	224	28	219	9	415	11	169	13

(11) These prisoners were fed on exactly the same food as the prisoners in the gaol. All the rations were first brought to the goal, divided there, one portion going to St. John's, the other portion being used in the gaol.

(12) The prisoners on St. John's Island made remarkably rapid recoveries, while the beri-beri cases kept on occurring at the gaol just as before.

Grades.

(13) In the upper grade 9 cases occurred, in the middle grade 37 cases, lower grade 27 cases, revenue grade 5 cases, short-sentence 88 cases, and civil prisoners 3 cases.

(14) The lower grade prisoners, whatever their labour, are always in the yards, and the middle grade prisoners in their work-sheds.

(15) With the exception of a few men, who are employed as cleaners, assistant cooks, toties, grass-cutters, the short-sentence prisoners are employed at stonebreaking and wheel, the same labour as the lower grade.

(16) It is in the men working in the stonebreaking cells and work-yards that most of the cases of beri-beri occur.

(17) Very few cases occur in prisoners employed in open-air work about the kitchens, halls, or grass-cutting.

(18) From this I would infer that the ventilation in the yards is not yet what it should be, and that more exposure to sunlight should be allowed, and I would recommend that work outside the prison should be given to those men as was done before beri-beri broke out.

Nationalities.

(19) The nationalities of those attacked were: Chinese, 155, with 13 deaths; Malays, 11, with 3 deaths; Indians, 3, no deaths.

Deaths from Beri-beri.

(20) There were 16, of whom 2 were middle grade prisoners, 6 lower grade, 7 short-sentence, and 1 civil prisoner.

(21) Owing to the decrease in the number of beri-beri cases in the first quarter, the temporary work-shed outside D Block, which had been in constant use for five years, was no longer required, and sleeping in the old civil prison was discontinued.

(22) During the last quarter, owing to the increase of cases it was found necessary to use the temporary shed again. The hospital was overcrowded, and as the sleeping accommodation at the old civil prison was no longer available, 37 cases of beri-beri were sent to Malacca.

(23) At the end of the year there were 48 cases of beri-beri remaining in hospital.

Dysentery.

(24) A very severe and intractable type prevailed. One hundred and four cases were admitted, with 13 deaths, as against 150 cases and 15 deaths in 1902. During the last quarter there were 50 admissions and 8 deaths. The *post-mortem* examinations showed the whole of the large intestine ulcerated, undermined, and in some cases gangrenous.

(25) The number of cases in the different grades were: Upper grade, 8; middle grade, 17; lower grade, 18; short-sentence grade, 53; revenue grade, 6, and civil prisoners, 2.

(36) The deaths in the different grades were: Middle grade, 5; lower grade, 1; short-sentence grade, 6, and revenue grade, 1.

(27) The nationalities of those attacked were: Europeans, 2; Indians, 6; Malays, 14; and Chinese, 82.

(28) Diarrhœa and dyspepsia have caused considerably fewer admissions than last year.

(29) Fevers have been mostly of the febricula type. No Anopheles have ever been found in the prison.

Zymotic Diseases.

(30) Enteric fever: Four cases of this disease occurred, all in Chinese; three cases in January within a few days of each other, and the last case in December. All the cases recovered.

(31) The first was revenue grade No. 23, admitted to prison on October 30th, 1902, on a three months' sentence. He was admitted to hospital on January 7th, having had fever for three days. He worked as a cleaner, and his cell was in D hall.

(32) The second case was short-sentence No. 306, admitted to prison on December 1st, 1902, on a six months' sentence. He was admitted to hospital on January 9th, having had fever for two days; his work had been stonebreaking and treadmill, and his cell was in B hall.

(33) The third case, short sentence, No. 14, was admitted to prison on November 7th, 1902, on a three months' sentence, and to hospital on January 10th, 1903, having had fever for three days; his work had been stonebreaking and treadmill, and his cell was in B hall.

(34) The fourth case was a remand prisoner who was admitted to the Civil Prison on November 23rd, 1903, and was brought to hospital on December 4th, having been ill for about a week. In this case the clinical diagnosis was confirmed by a bacteriological one.

(35) The source of infection in the first three cases was probably within, and of the fourth without the prison.

Mumps.

(36) Fifteen cases of mumps were admitted, occurring in lower grade prisoners, 13; middle grade, 1; and short-sentence grade, 1.

Dengue.

(37) Six cases were admitted.

Deaths.

(38) There were 45 deaths this year in hospital. The causes of death were: Beri-beri, 16; dysentery, 13; tuberculosis, 6; cerebral apoplexy, 3; valvular disease of the heart, 2; and general debility, cirrhosis of liver, abscess of liver, peritonitis and glaucoma, with embolism of cerebral artery, each 1.

Return of Diseases and Deaths, 1902-1903, at the

Singapore Prison.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	22	—	23
Anæmia	597	175	632
Anthrax	—	—	
Beri-beri	1,293	457	1,465
Bharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	4	—	4
Cholera	344	232	344
Choleraic Diarrhœa	2	1	2
Congenital Malformation			
Debility	518	198	551
Delirium Tremens			
Dengue	51	—	52
Diabetes Mellitus			1
Diabetes Insipidus			
Diphtheria	3	—	3
Dysentery	482	175	504
Enteric Fever	103	46	112
Erysipelas	1	—	1
Febricula	258	—	265
Filariasis		—	
Gonorrhœa	147	—	162
Gout	6	—	6
Hydrophobia	—	—	—
Influenza	2		2
Kala-Azar		—	
Leprosy	86	22	120
(*a*) Nodular			
(*b*) Anæsthetic			
(*c*) Mixed	—	—	—
Malarial Fever—	868	78	933
(*a*) Intermittent—	—	—	
Quotidian	—		—
Tertian			—
Quartan			—
Irregular			
Type undiagnosed	166	28	166
(*b*) Remittent			
(*c*) Pernicious		—	—
(*d*) Malarial Cachexia	35	0	35
Malta Fever	—	—	—
Measles	12	—	12
Mumps	21		21
New Growths—			
Non-malignant	11	—	12
Malignant	17	9	17
Old Age			
Other Diseases			—
Pellagra	—	—	—
Plague	144	26	144
Pyæmia	4	4	4
Rachitis	—	—	
Rheumatic Fever	—	—	
Rheumatism	722	—	754
Rheumatoid Arthritis	—	—	
Scarlet Fever		—	—
Scurvy	2	—	2
Septicæmia	4	3	4
Sleeping Sickness			
Sloughing Phagedæna	—	—	
Small-pox	112	23	145
Syphilis—			
(*a*) Primary	212	—	238
(*b*) Secondary	476	60	511
(*c*) Tertiary			—
(*d*) Congenital	—	—	—
Tetanus	12	6	12
Trypanosoma Fever	—	—	—
Tubercle—	397	227	413
(*a*) Phthisis Pulmonalis		—	—
(*b*) Tuberculosis of Glands			—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Diseases of Bone	—	—	—
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	—	—	—
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	226	12	243
Circulatory System	—		
(*a*) Valvular Disease of Heart	32	20	38
(*b*) Other Diseases	14	5	16
Digestive System—	—	—	—
(*a*) Diarrhœa	549	257	507
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	17	3	19
Congestion of Liver	1	—	1
(*d*) Abscess of Liver	—	—	—
(*e*) Tropical Liver	—		
(*f*) Jaundice, Catarrhal	3	—	3
(*g*) Cirrhosis of Liver	—		
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue			
(*j*) Other Diseases	427	60	440
Ear	9	1	10
Eye	296	1	319
Generative System—			
Male Organs / Female Organs	248	5	263
Lymphatic System	127	—	130
Nervous System	509	81	707
Nose	—	—	—
Organs of Locomotion	81	2	84
Respiratory System	335	59	343
Skin—	—	—	—
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	58	—	61
(*f*) Other Diseases	969	—	976
Urinary System	31	8	33
Injuries, General, Local	753	40	796
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	—	—	—
Parasites—	303	—	318
Ascaris lumbricoides	14	—	14
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	
Tape-worm		—	—
Poisons—			
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	78	—	79
Surgical Operations—			
Amputations, Major	2	—	3
,, Minor	2	—	2
Other Operations	14	—	14
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

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perhaps the most important addition to the number of post-graduate schools is that of the

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Every one is aware of the public-spirited manner in which the Seamen's Hospital Society came forward in 1899 in the matter of the London School of Tropical Medicine, and provided the means of instruction in tropical diseases at their branch hospital at the Albert Docks; and now the authorities of the Society are about to initiate a post-graduate school at their large hospital at Greenwich. This public-spirited endeavour deserves every encouragement and support. The staff of the hospital in the most unselfish manner have not hesitated, for the benefit of the contemplated clinical school, to forego some of their privileges and to invite eminent physicians and surgeons from other schools to take part in the teaching and clinical work of the school. In the department of medicine we find such well-known names as those of Sir Dyce Duckworth, Professor Hewlett, Dr. Frederick Taylor, Dr. Guthrie Rankin, and Dr. Rose Bradford. On the surgical side the names are of no less consequence: Sir William H. Bennett, Mr. Mayo Robson, Mr. Carless, Mr. William Turner, and Mr. Lawrie McGavin. Mr. Malcolm Morris has charge of the teaching of "Diseases of the Skin," Mr. Cargill "Diseases of the Eye," Dr. St. Clair Thomson "Diseases of the Throat, Nose, and Ear." Practical and tutorial classes are also being organised for all branches of medical instruction. Residential accommodation for post-graduates has not been neglected; and the advantages of a mess and club-room are provided at the hospital itself. The whole scheme has been well thought out and carefully organised; and the liberal lines on which the school has been established brings it home to us that a great public service has been instituted deserving the support of every one who wishes well to the profession of medicine.

EXTRACT FROM THE "EDITORIAL" IN *CLIMATE*, OCTOBER, 1905.

IT is with very sincere regret that we address for the last time the readers of *Climate*, but at the same time we have the great satisfaction of announcing that some provision will be made in the future whereby they may be able to obtain the latest information concerning the progress of tropical hygiene. As will be seen by the correspondence which will be found in another column, the Editors of the *Journal of Tropical Medicine* have generously agreed to devote four issues annually of their valuable paper to the consideration of scientific questions and hygienic subjects, which would be of interest not only to the medical profession, but to the large class of residents in tropical climates, to whom some knowledge of health problems is essential. In the interview with Sir Patrick Manson, which appears on another page, will be found the expression of very strong views as to the necessity of the education in these subjects of all Europeans who are called to labour in tropical climates, and these special issues of the *Journal of Tropical Medicine* will undoubtedly prove to be an important connecting link between the medical experts who are investigating the cause of disease and those who must act upon the advice which they are able to give. As we have often contended, it is of little use for medical men to advocate reform unless they are backed up by the public opinion of the intelligent residents in tropical climates, from whom in some cases the money for the promotion of reforms must be forthcoming, or whose active co-operation, as in the case of governors of Colonies and other high officials, is essential if progress is to be made. Again, missionaries, and those who will have the responsibility in the instruction of native children in the problems affecting the transmission of disease by insects, need it, as Sir Patrick Manson has so well pointed out. But it is almost invidious to single out any classes who should be especially instructed, for the co-operation of all is needed, and the obstinacy of the few who may refuse to adopt hygienic measures may, as is so often the case in other diseases, prove a serious danger to the many.

There will be found enclosed in this issue a special order form for subscription to these special hygienic numbers of the *Journal of Tropical Medicine*, which the publishers have issued, and which contains information as to the method of subscription. We cordially invite our readers to take advantage of this offer.

The cordial support which *Climate* has received from the two British Schools of Tropical Medicine in London and Liverpool has been a matter of great satisfaction, and our hearty thanks are due to Sir Patrick Manson and Major Ronald Ross for much valuable advice and assistance.

Our readers have not been a very large body, but we believe that they are a very influential body, and we greatly value the kind expressions of regret which have reached us from many sides on the announcement of the discontinuance of *Climate*.

To Mr. James Cantlie and Professor Simpson, Editors of the *Journal of Tropical Medicine*, we offer our sincere thanks for their interest in our paper, and we wish them every possible success in continuing the work which *Climate* has begun.

TREATMENT OF BLACKWATER FEVER BY "POTASH."

TO THE EDITORS OF THE "JOURNAL OF TROPICAL MEDICINE."

SIRS,—I was interested in reading a few months back in your Journal a note by Dr. Cameron Blair, W.A.M.S., on the use of potassium salts in the treatment of anæmias generally, and of blackwater fever particularly. I have myself no practical knowledge of the *rôle* of potassium salts in these conditions, but I have observed that "potash" is largely used by the natives of the Lake Chad district when they suffer from "blackwater fever." Their treatment for symptoms which apparently coincide with those of hæmoglobinuric fever in Europeans consists in drinking large quantities of potash water and sucking fresh limes. This seems a rational line of symptomatic treatment, at any rate, but it must be borne in mind that both remedies lie within easy reach of all, and are by no means confined to the treatment of "blackwater fever." I only wish to state facts, any definite conclusions would be premature without further careful investigation.

I am, yours &c.,

ALLAN C. PARSONS,

West Africa Medical Staff, N. Nigeria.

HEREDITY OF ALBINISM.

WE have received the following notice for publication:—

"An important investigation as to the *Heredity of Albinism in Man* is being carried out by Professor Karl Pearson, F.R.S., of University College, London, with the co-operation of Mr. Nettleship (Shottermill, Surrey, England) and Dr. E. Stainer (Physician to the Skin Department, St. Thomas's Hospital), 60, Wimpole Street, London, W. Cases bearing on the subject, *either positively or negatively*, will be very thankfully received by any of those gentlemen. The investigators desire to collect a large series of examples of albinism—complete or incomplete, general or partial—in which the family history of the albino patient can be traced for one, two, three or more generations. The sex and prevalent colour of eyes and hair, in as many of the patient's relations and ancestors as possible, should also be noted, whether any of them were albinotic or not, also all instances of consanguineous marriage. Cases of albinism of the eyes, in persons with congenitally pied skin (most easily recognised amongst dark races) will also be very valuable, even without family history, acquired leucoderma being, of course, excluded."

Towards the elucidation of this interesting subject medical men in the Tropics have ample opportunity of contributing, and it is to be hoped that many will send at least a notification of cases met with in their practice amongst the coloured races.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Monats. f. prakt. Derm.," 1905, p. 88.

INJECTIONS OF CHAULMOOGRA OIL IN LEPROSY.

Tourtoulin began this treatment in 1894, in doses of 5 grammes (1 dram 15 minims). In 1901 he reported that nine cases of leprosy which he had treated with the oil, some subcutaneously, some internally, had, with one exception, all benefited. Eleven cases treated by other observers have all improved: the infiltration diminished, sensation returned, nails grew again. Improvement began to show itself in most cases after the fifth injection. The injections may be painful, and out of 900 injections, four times pulmonary embolism was seen, with difficult breathing, pallor, symptoms not sufficient to prejudice the treatment. The subcutaneous tissue of the forearm or leg is the best place for the injections, which must be continued for years, as the lesions are apt to reappear, though in a milder form, if injections are omitted.

T. P. B.

"Medical News," July 29, 1905.

THE CURE OF LEPROSY.

Dyer has obtained good results only from strychnine, anti-venomous serum, chaulmoogra oil, and chlorate of potash. Ten cases remained free from signs and symptoms from one to seven years, the conclusion being that leprosy is curable, certainly in all the early stages. The essentials of treatment are: (1) Full diet, avoiding only indigestible foods. (2) Hot baths twice a day, with or without soda. (3) The patient needs tonics, febrifuges. Intercurrent or complicating diseases should be watched for. (4) Strychnine is a *sine quâ non* in the treatment. (5) Chaulmoogra oil is best given before meals, in capsules, in hot milk or in milk of magnesia. The initial dose should be three drops, and increased every second or third day. At times it is advisable to give the oil in pill form combined with extract of nux vomica, with tragacanth and soap as excipients. (6) Improvements may be delayed for three or six months or longer. (7) Treatment should be continued when all evidences of the disease have disappeared.

T. P. B.

"Nederlandsch Tydschrift voor Geneeskunde," September 30.

MYIASIS IN THE ARGENTINE. ROORDA SMIT.

In Cordoba infections of wounds are due to *Calliphora anthropophaga*, while in Buenos Ayres *Lucilia hominivorax* is most frequent.

Instrumental interference with wounds is usually disastrous. The most satisfactory treatment is the application of calomel; in the cases of open wounds the powder is dusted on, and a suitable dressing superimposed. In dealing with sinuses of the nose and ear the powder is blown in, and a plug of wool, covered with the drug, inserted.

T. P. B.

"Le Caducée," October 7, 1905.

MOSQUITOES AND HÆMOGLOBINURIA.

M. C. Claude describes four cases seen in Oran, in Algeria.

(1) A married woman, long resident in the district, was attacked with severe gastro-bilious fever, the symptoms being jaundice, vomiting, coma, and three crises of hæmoglobinuria. She had 6 grammes (a drachm and a half) of quinine in hypodermic injections before the first crisis. At this time her husband and sister had severe malaria, without having taken any quinine as a preventive measure.

(2) A married woman, a recent resident, had an access of intermittent fever, which developed into a quartan ague. The symptoms were generalised purpura, pain in the back, two attacks of hæmoglobinuria; and death on the sixth day. No quinine had been taken before the attack. Three to four grammes were administered by the mouth or subcutaneously during the illness. Her husband and sister had characteristic intermittent malaria.

(3) An ex-soldier, an old resident and cachectic, on returning from France was suddenly attacked with fever, having gastro-bilious symptoms, epistaxis, bilious diarrhœa, hæmoglobinuria on the fifth day; death took place on the next day. No quinine had been previously taken; 5 grammes were injected during the illness. At the same time a child of five, in the same house, had a typical attack.

(4) A European girl, aged 19, an old resident, was three days ill with continued fever, epistaxis; a generalised purpuric rash appeared on the sixth day, with hæmoglobinuria; she died on the eighth day. A gramme and a half of quinine was injected. At the same time the rest of the family, four in number, had malaria.

The cases occurred during a severe epidemic of malaria, and the blood was not examined. The conclusion arrived at is that hæmoglobinuria is a paramalarial manifestation, because they appear with similar frequency, at the same times in identical localities.

"Le Caducée," October 21, 1905.

TUBERCULOSIS IN THE FRENCH COLONIES.

Pulmonary Tuberculosis.—Kermorgant states that since New Caledonia was made a penal settlement, the time-expired men have spread tuberculosis amongst the natives, who are decimated by it and leprosy. It is the same in Polynesia, especially at Tahiti.

In Indo-China phthisis is not very prevalent.

In Senegal it is rapidly extending. On the Ivory Coast phthisis and dysentery cause the majority of the deaths. In Dahomey it becomes less common towards the interior, in proportion as there is less contact with Europeans. On the Congo, where it was previously unknown, it is extending rapidly. In Madagascar there is less tuberculosis than in France. It is very common amongst the coolies from Reunion, who stay under observation six months before they are sent to Diego Saurez. At Mayotte it causes a third of the deaths.

In the West Indian Islands the majority of the deaths are due to it, especially amongst the blacks. In Cayenne it carries off a third of the coloured population. In the Colonies tuberculosis is not only extremely common, but also extremely fatal.

Europeans are not more liable to tuberculosis in the Tropics than in Europe, but the disease is much more rapidly fatal. Amongst the semetic races the Arabs are especially vulnerable. Negroes are especially liable to tuberculosis, which is rapidly fatal. The yellow races have only a relative immunity. Half-castes are less resistant than the pure-bred natives. The transport of individuals to a new environment, differing in temperature, in humidity, in prevalent winds and rainy seasons, has a marked influence, and predisposes to bacillary infection, which has an exaggerated virulence.

Occupation, as the fatigues at military service by the natives, soon develops latent weakness. Tuberculosis of the lungs is the scourge of convents. Penal settlements suffer severely; of the convicts in Cayenne, 52·42 deaths per 1,000 are due to tuberculosis, and 110 in New Caledonia. Amongst the ticket-of-leave men it is 43·4 in Cayenne and 104 in New Caledonia. The military garrison have 145·4 out of 1,000 deaths due to tuberculosis in Cayenne, and 228 in New Caledonia.

Climate it only a secondary factor in the production of tuberculosis; the primary cause is neglect of hygiene, and it is in connection with this that prophylactic measures should be taken. In Tahiti alcohol is prohibited, and it should be excluded from West Africa; at all events it should be heavily taxed, and the supply of it as part of the wages of natives should not be allowed.

Tuberculosis and Malaria.—Crespin explains the extension of tubercle in Algeria as due to the relations between the natives and Europeans favouring contagion.

Tuberculosis may develop in persons who have previously suffered from malaria, or the two diseases may appear together. When tuberculosis develops in a patient with chronic malaria, sometimes its progress is very rapid; at other times its progress is arrested, or even entirely stopped.

There is no antagonism between the two diseases.

Surgical Tuberculosis amongst the Arabs. — In Tunis tuberculosis is very common amongst the Arabs, especially in the form of lesions of the bones and joints. It would seem that there is special liability to disease of bone, as shown by the frequency of osteomyelitis, due to hereditary syphilis. Not unfrequently suboccipital caries is seen, starting from the base of the skull, and affecting the neighbouring parts. T. P. B.

NEW CURE FOR DYSENTERY. — Messrs. Allen and Hanbury, Plough Court, London, E.C., have prepared a tincture from the root of a South African plant which has obtained considerable local reputation in the treatment of acute and chronic dysentery in South Africa. Any medical man wishing to test the efficacy of the drug can obtain the preparation from Messrs. Allen and Hanbury.

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THE

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Professor of Zoology and Comparative Anatomy, and Director of the Zoological Museum of the University of Königsberg, Prussia.

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AND

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1906

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Reviews.

THE ANIMAL PARASITES OF MAN.

English-speaking medical men are again indebted to Miss Pauline Falcke for an accurate and excellent translation of a standard German work. To few of us is given the facility to read a foreign language with the expedition necessary in these bustling times, and to even the favoured few who are apt linguists, many lack that intimate knowledge of any foreign language requisite for scientific accuracy. We are therefore beholden to scholars of Miss Pauline Falcke's special attainments for the care and labour bestowed upon translations intended for our instruction and benefit. Messrs. Bale, Sons and Danielsson have time and again risked large sums of money in providing useful translations of medical works, more especially for the benefit of medical men resident in the Tropics, and to them we are deeply indebted, and hope that their efforts are duly appreciated. Encouragement of this useful branch of publication can be shown in one direction only, namely, by purchasing the works intended especially for those engaged in tropical work; and as only the best works in foreign languages are translated, purchasers can have no hesitation in providing themselves with any book Messrs. Bale, Sons and Danielsson place in the market.

The "Animal Parasites of Man," by Max Braun, has no rival; it is the most complete, erudite and accurate book on the subject extant. The investigation of tropical diseases proceeds so rapidly, and new discoveries are so frequent, that even before a book in a foreign language can be translated, however rapidly, the book dealing with them is apt to be behind the times. In the present instance the drawback has been obviated by two masters of the subject in this country, namely, Louis W. Sambon, M.D., and Fred V. Theobald, M.A., who have brought our knowledge of animal parasites in this book up to date.

The introductory chapter on Parasites in General is a liberal education in itself. Plant parasites—phyto-parasites—are not described in this volume; animal parasites—zoo-parasites, are alone dealt with. The parasites are grouped into occasional, permanent and incidental sections. The former terms explain themselves; by incidental parasites are meant those parasites of man that are only rarely met with. The origin and derivation of parasites is interesting reading. The animal parasites of man are classified as:—

A. Protozoa, including the Rhizopoda, Flagellata, Sporozoa, and Infusoria.
B. Platyhelminthes (Fluke-worms), including Trematoda and Cestodes.
C. Nematodes (Thread-worms).
D. Acanthocephala.
E. Hirudinea.
F. Arthropoda—the Arachnoidea, the Myriapoda, and Insecta.

The Culicidæ, or Mosquitoes, are specially and separately dealt with, and other Nematocera, such as Sand-flies, Flies, Gad-flies, Wolf-flies and Tsetse-flies, are fully described.

No fewer than 294 illustrations are portrayed with admirable and teaching distinctness. The text and printing are clear, the paper good, and the whole a handsome volume, creditable alike to the translator and publishers.

The animal parasites of man are found nowadays to play so important a part in disease and in public health generally, especially in tropical countries, that no English-speaking medical practitioner in warm climates can afford to be without Braun's work close at hand.

New Drugs, &c.

The Valley Chemical Company, Danbury, Connecticut, U.S.A, have sent us specimens of Apetal, a stomachic tonic; Thialim, a laxative salt of lithia; Prunol, a stimulating expectorant; Taroena, the Hawaiian Health Food.

"Allenbury's" Teat.—Messrs. Allen and Hanbury, of Bethnal Green, London, E., have added an improvement to the teat of their well-known "Feeder." The teat is so fixed that it is well-nigh impossible for the child to pull it off.

Cyllin as a Disinfectant. — According to researches made by E. Klein, M.D., F.R.S., Cyllin prepared by Jeyes' Sanitary Compounds Company, 64, Cannon Street, London, is fifteen times more efficient than carbolic acid when tested against a vigorous culture of glanders.

COLONIAL CIVIL SERVICE.

Dr. G. Carnana Scicluna, Medical Officer of Health, Malta, has been promoted to the office of Chief Government Medical Officer and Superintendent of Public Health on probation for one year in place of Lieutenant-Colonel R. P. Samut, M.R.C.S., who has retired. Dr. Scicluna has also been made a member of the Executive Council and an official member of the Council of Government.

Dr. J. C. Franklin is acting as Senior Medical Officer of the Gambia during the absence of Dr. R. M. Forde, who has arrived in England.

Lisbon International Medical Congress.—The arrangements for the Congress to be held at Lisbon, in April, 1906, are now well under way. The Congress commences on April 19th and continues until the 26th, and specially arranged excursions are being advertised from London and Liverpool. Those intending to avail themselves of the privilege offered should communicate with the Travel Bureau, 29, Cockspur Street, Charing Cross, London, S.W.

THE STRAITS AND FEDERATED MALAY STATES GOVERNMENT MEDICAL SCHOOL.

Syllabus.

Patron:

His Excellency Sir John Anderson, K.C.M.G.

Council:

The Principal Civil Medical Officer (*President*).
The Secretary for Chinese Affairs (*Vice-President*).
The Honourable The Colonial Treasurer.
The Principal of the School.
The Nominee of the Resident-General: Dr. M. J. Wright, State Surgeon, Perak.
The Nominee of the Straits Branch of the British Medical Association; Dr. Lim Boon Keng, M.B., C.M. (Edin.).
The Honourable Tan Jiak Kim.
Loke Yew, Esquire.
Gan Ngoh Bee, Esquire.

President of the Council and Dean:

D. K. McDowell, C.M.G., Principal Civil Medical Officer.

Principal:

G. D. Freer, M.B.(Lond.), D.P.H.

On receipt of the Governor's reply a meeting of the leading members of the Chinese community was held in the Chinese Protectorate, Singapore, at which the Governor's offer was gratefully accepted and arrangements for the collection of the necessary subscriptions made. Over eighty thousand dollars were finally collected, twenty thousand of which were subscribed in Penang and nine thousand (in one donation) in the Federated Malay States. The Singapore Chinese, headed by the Honourable Tan Jiak Kim (who himself gave $12,000), were by far the largest subscribers.

The condition laid down by the Governor having been amply fulfilled, and the Secretary of State's approval of the scheme having been obtained, a vote was taken in the Legislative Council, and a Bill (Ordinance XV. of 1905) introduced to incorporate the Council of the School.

Under the Ordinance, "It shall be lawful for the Council to grant to such students of the Straits and Federated Malay States Government Medical School as have passed at the school an examination in medicine, surgery, and midwifery (hereinafter called a qualifying examination), diplomas as licentiates of the school."

"Every such qualifying examination shall be held at such times as the Council shall appoint and shall be conducted by a Board of Examiners nominated by the Council, of whom the majority shall be persons not employed as teachers in the school, and the standard required from candidates at any qualifying examination shall be such as sufficiently to guarantee the possession of the knowledge and skill requisite for the practice of medicine, surgery and midwifery."

"It shall be lawful for the Council to cancel any diploma granted under this Ordinance if the holder thereof shall at any time be convicted of any heinous offence or shall be guilty of infamous conduct in any professional respect."

"Every holder of a diploma as a licentiate of the School shall be entitled to be registered under 'The Medical Registration Ordinance, 1905,' or any other Ordinance for the time being in force for the registration of medical practitioners in the Colony and to practise medicine, surgery, and midwifery accordingly."

"It shall also be lawful for the Council to issue certificates of proficiency as hospital assistants or nurses to such students as shall have completed to the satisfaction of the Principal of the School such a course of instruction as may be approved by the Council."

"Semaine Médicale," September 10, 1905.

MALARIA SIMULATING ACUTE PERITONITIS. M. GILLOT.

The symptoms of this larval form of malaria are abdominal dilatation and pain, vomiting, small pulse, &c. The symptoms may occur at the invasion, or during the progress of a malarial attack, also during intermittent or remittent fevers, and as complications in other diseases. The diagnosis depends on the absence or presence of a malarial parasite from the blood, and the result of the administration of quinine, though the parasite may be absent in pernicious attacks, and in patients previously treated with quinine. Typhoid is diagnosed by Widal's reaction, and also by the blood count, which, in malaria, shows slight increase of leucocytes, whereas it is conspicuous when suppuration is present. T. P. B.

"Le Caducée," November 4, 1905.

TRAUMATIC RUPTURE OF MALARIAL SPLEEN: RECOVERY.

A soldier, aged 20, six months resident in Mostaganem, had been twice treated for malaria, with enlargement of spleen.

At two in the afternoon he was hit over the spleen with a revolver in its case. He felt severe pain at the time and he quickly collapsed; there were no other symptoms.

When seen in hospital, at ten in the evening, he was very pale, the splenic area was painful, the abdomen distended and tender, so that the patient laid on his right side. When in this attitude the more dependent part was absolutely dull. The relative dulness extended to the middle line, there was diminished resonance in the hypogastric area as far as the umbilicus, the left side of the abdomen was resonant. The spleen dulness was notably increased.

He complained of pain on the left side of the neck, which prevented him turning his head, there was tenderness on pressure behind the sternomastoid, apparently corresponding to the course of the phrenic nerve. No pulse could be felt in any artery, but only a tremor in the carotids.

On admission 200 cc. of a 1 per cent. gelatine serum and 10 cc. antitetanic serum were injected.

At half-past eleven the patient had improved, the pulse could be felt: 150 cc. of gelatine serum was injected. During the night the patient vomited twice, and slept for an hour.

Next morning the pulse was 110, soft, but regular; the temperature was 35·6° C., and 38.4° C. in the evening. He could turn on to his back, when the sides of the abdomen were found to be dull, especially the right. The pain in the neck was less.

The dulness, pain, and distension of the abdomen lessened; the pain over the spleen continued. The temperature was raised, reaching its highest point, 39·4° C. on the fourth day, and oscillated between 37° C. in the morning and 38° C. at night, finally remaining normal on the nineteenth day.

EXCHANGES.

Annali di Medicina Navale. Annali d' Igiene Sperimentale Archiv für Schiffs u. Tropen Hygiene. Archives de Médicine Navale. Archives Russes de Pathologie, de Médec. Clinique et de Bacteriologie. Australasian Medical Gazette. Boletin de Medicina Naval. Boston Medical and Surgical Journal. Bristol Medico-Chirurgical Journal. British and Colonial Druggist. British Journal of Dermatology. British Medical Journal. Brooklyn Medical Journal. Caducée. Climate. Clinical Journal. Clinical Review. Giornale Medico del R. Esercito. Hong Kong Telegraph. Il Policlinico. Indian Medical Gazette. Indian Medical Record. Indian Public Health. Interstate Medical Journal. Jahresbericht. Janus. Journal of the Royal Army Medical Corps. Journal of Balneology and Climatology. Journal of Laryngology and Otology. Journal of the American Medical Association. La Grèce Médicale. Lancet. Liverpool Medico-Chirurgical Journal. Medical Brief. Medical Missionary Journal. Medical Record. Medical Review. Merck's Archives. New York Medical Journal. New York Post-Graduate. Pacific Medical Journal. Polyclinic. Public Health. Revista de Medicina Tropical. Revista Medica de S. Paulo. Sei-i-Kwai Medical Journal. The Hospital. The Northumberland and Durham Medical Journal. Transactions of the American Microscopical Society. Treatment. West India Committee Circular. West Africa.

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2.—As our contributors are for the most part resident abroad, proofs will not be submitted to those dwelling outside the United Kingdom, unless specially desired and arranged for.

3.—To ensure accuracy in printing it is specially requested that all communications should be written clearly.

4.—Authors desiring reprints of their communications to the JOURNAL OF TROPICAL MEDICINE should communicate with the Publishers.

5.—Correspondents should look for replies under the heading "Answers to Correspondents."

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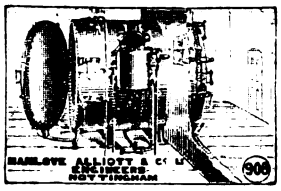
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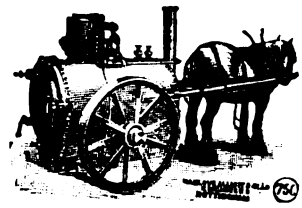
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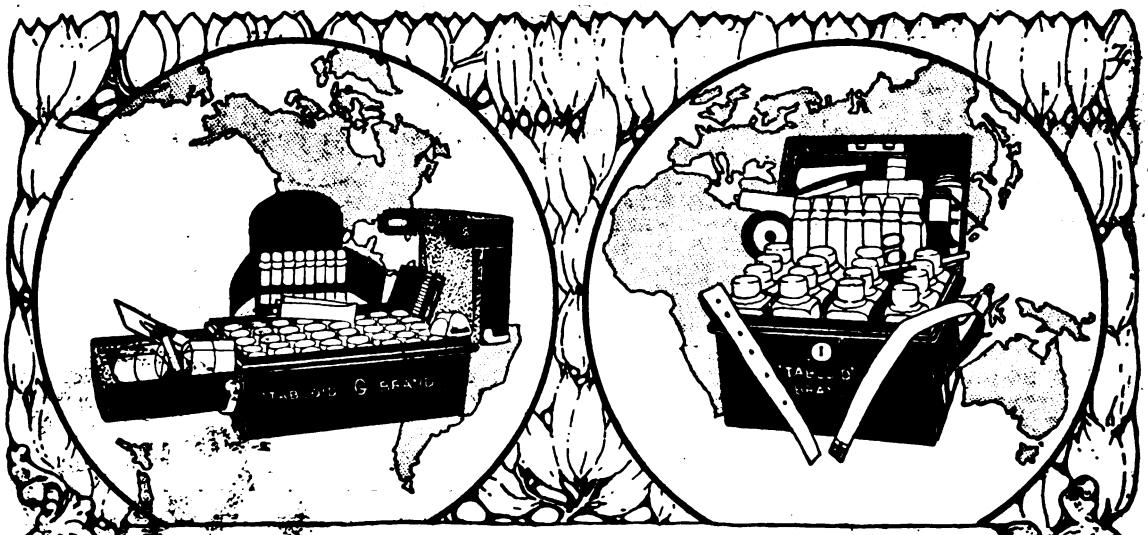
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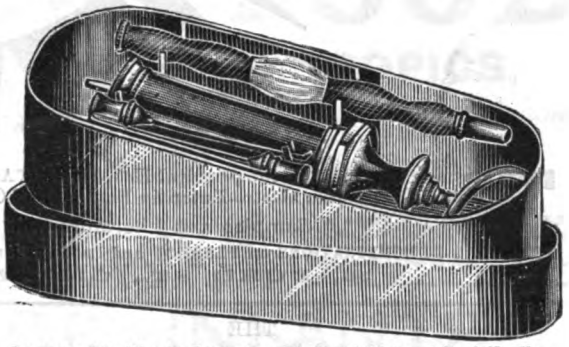
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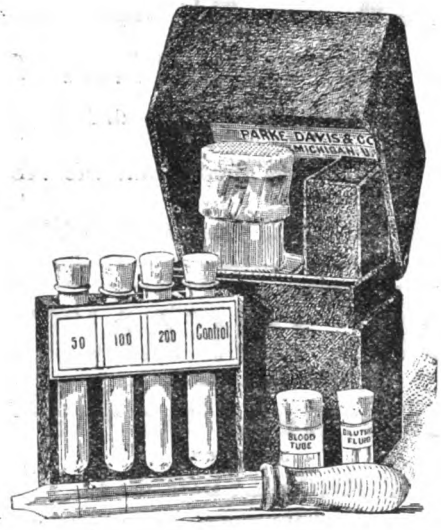
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REPORT ON THE DENGUE EPIDEMIC IN BRISBANE IN 1905.

At the meeting of the Queensland Branch of the British Medical Association, held on April 7th, a Committee, consisting of the President (Dr. Robertson), and Drs. Thomson, Love, Turner, and Wield, were appointed to draw up a report on the epidemic of dengue fever.

Dengue appears to be endemic in the Eastern Tropics. In the summer of 1897-8 an epidemic of the disease occurred throughout the coastal district of Queensland, and in Brisbane attacked a very large proportion of the population.

In the summer of 1905 Brisbane has suffered from a second epidemic, which has also been wide-spread in the State from the extreme north to its southern boundary, and extending also westward to the railway termini. The differences between this and the former epidemic are relatively small, in the main the symptoms are identical, the chief differences being in the relative frequency of certain symptoms, such as the rash, the gastro-intestinal symptoms, &c.

The epidemic commenced towards the end of December, and disappeared in June, lasting barely six months.

Origin and Mode of Spread.—There appears to be no room to doubt that the epidemic was imported from the north. It is undoubtedly highly infectious, but clinical observation does not enable us to form any definite opinion as to the mode in which the infection is conveyed from person to person. In some respects the spread of the disease suggests some peculiarity in the method of propagation differing from that of the well-known diseases, influenza, scarlet fever, measles, &c. It appeared to spread particularly to contiguous houses, whole streets being attacked *seriatim*.

One observation appears to have some bearing on the method of propagation. That is, the medical men have, in many instances, appeared immune to the disease, although exposed to it daily, indeed hourly, until cases appeared in their own households, when they fell victims, being usually among the last members of the households to be attacked.

Similar facts have been reported as to employees in city warehouses.

Earliest Cases.

The earliest case reported to us occurred on November 24th, on the outskirts of the Spring Hill district, and another on December 2nd by the same observer in Swan Hill district. These appear to have been isolated cases; the first outbreak in an epidemic form occurred in the Spring Hill district near the end of December, The disease raged there throughout the month of January, while only a few isolated cases were reported from other districts, until early in February, when it appears to have established itself in fresh centres, and soon prevailed universally, both in the city and suburbs. In the appendix will be found further particulars.

Extent of the Epidemic.

No other epidemic disease attacks such a large proportion of the population. Among the medical profession the impression prevails that it is not an exaggeration to estimate that more than three-fourths of the population have been attacked. When the disease has entered a house, in the large majority of instances all the inmates are attacked sooner or later; it was the exception for one or two to escape, though this occurred sometimes.

From the records given in the appendix as to the prevalence of the epidemic among the Civil Service, employees of several large business firms, and others, it appears that the incidence of the disease in these instances was from about 80 to 90 per cent. These figures probably do not include some of the mildest attacks, as in most instances they refer only to those who were absent from duty. In a suburban return (Belmont) the proportion is lower, about 70 per cent.

Of thirty-three married men attacked in the Defence Force, in twenty-five instances their wives also had the disease, and of their fifty-nine children, fifty-seven were attacked.

On the Island of St. Helena in Moreton Bay, which is used as a convict station, the majority of the warders who were exposed to infection by visiting town were attacked, but the disease only spread on the island to a small extent. Among ten persons belonging to the families of the staff, who did not leave the island, five were attacked, that is, 50 per cent. But of 195 prisoners only five had the disease—2·5 per cent.

Even isolation in the city gaol had a marked influence on the number of cases, as is shown by the following return :—

Boggo Road Gaol.		No.	Attacked.	Per cent.
Male division.	Warders	12	10	83·3
	Prisoners	155 (average No.)	32	20·6
Female division.	Warders	5	5	100
	Prisoners	40 (average No.)	29	72·5

Incubation Period.

It has been very difficult to gather reliable evidence under this head, owing to the multiplicity of possible sources of infection. The general impression seems to be that the period of incubation is from three to six days. There are good grounds for believing it may be as short as twenty-four hours.

The following cases give more definite information :

Dr. Lockhart Gibson : Dwelling five miles from Brisbane, a quarter of a mile from nearest neighbours. Groom had only two opportunities of contracting dengue within a week of his attack. On Monday, horse-feed brought by a man convalescing from dengue. On Wednesday attended a sports meeting in town. Thursday evening, malaise and fever; sent to hospital next day. Discharged Saturday week, after having had a normal temperature for two days, and on the Monday evening following returned to his situation. On the Wednesday evening the cook noticed to have a temperature. She had had no other opportunity of contracting dengue for fully a week previously. Both cases had fairly severe attacks.

Dr. Faulkner : A woman at a solitary farmhouse ten miles from Toowoomba was suddenly seized with the

the initial rigor of an attack of dengue one evening. Exactly twenty-four hours before, a nurse, who was convalescent from dengue, arrived from Brisbane, and slept in the same room. There had been no cases of dengue previously in the house, and as far as could be ascertained there was no other possible source of infection. Seen a few hours before the arrival of the nurse, she showed no symptoms of dengue.

Dr. Little: A servant girl was away for ten days in the bush. On her return she contracted dengue within forty-eight hours.

Dr. Lore: A nurse arrived from Southport, where there were no cases at the time; went to Lady Musgrave Lodge, where there was dengue; left same day to nurse a case and fell ill on the third day after arrival, though there was no dengue in the house she went to.

Dr. Wield: A young woman came from Helidon, where there was no dengue, arriving on Friday at 1 p.m.; stayed at an infected house and developed the disease on Tuesday morning.

Dr. Brockway: Mr. W. and two daughters landed in Brisbane from England on April 4th, and on April 8th they all showed symptoms, somewhat suddenly, of dengue.

Age Incidence.

All ages are attacked. The disease has been observed within a few days of birth. Infants usually contract the disease after the mother, but in one or two instances a baby at the breast was the first in the house to be affected. Occasionally suckling infants lying in bed with their mothers, who are suffering from dengue, escape the disease.

Vigorous adults suffer most during the attack. Those previously in weak health are more liable to prolonged and retarded convalescence.

The aged and infirm usually have the disease mildly, sometimes very mildly. A striking instance of this was furnished by the Diamantina Hospital for Chronic Diseases, which contains a large proportion of old people over seventy, and others debilitated by advanced rheumatism, paralysis, cancer and phthisis. Of these two-thirds took the infection, but there were no deaths and no serious cases (excluding the phthisical patients). The proportion attacked may have been larger than two-thirds, as in many the symptoms were so mild as to be scarcely recognisable. Healthy nurses suffered more severely than the patients. On the other hand, several phthisical patients had their tubercular disease aggravated and death accelerated.

General Sketch of the Symptoms.

Among the thousands of cases that came under observation there have been observed many rare and exceptional symptoms and complications. Lest the enumeration of these induce a false impression, it may be well to give a preliminary sketch of the prominent features of the great bulk of the cases. The onset is usually sudden, the initial rise being attended occasionally by a suffusion of the face, known sometimes as the initial eruption. Suffusion of the eyes with often slight photophobia are the rule at this stage. Sometimes the onset is attended by shivering. The pulse is not as a rule accelerated in proportion to the temperature, and may even be slowed. The initial rise of temperature is attended usually by severe headache, as a rule frontal or post-orbital, which, however, is often slight or absent in children. Severe pains, most marked in the lumbar region, but also affecting the limbs, are present in most adult cases. Anorexia is as a rule complete. The tongue varies; it is often densely furred, but may be clean and moist. In many cases abdominal pain and retching are a marked feature. On the third or fourth day there is a remission of the temperature, which sometimes falls to normal. A terminal rise succeeds the remission in typical cases, and is usually accompanied by marked aggravation of the pain in back and limbs, and increased prostration. The characteristic eruption usually appears after the remission and consists of a punctate roseolous eruption, often evanescent, very variable in its extent, and to some degree in its character, but frequently absent even in well-marked attacks. In young childen, who as a rule suffer less from other symptoms than adults, the rash is more prominent. The temperature usually falls abruptly at about the end of the fifth period of twenty-four hours after the invasion. With the fall all the symptoms ameliorate, but do not disappear for another two or three days, or perhaps longer, the tongue, when furred, often being slow to clean, and the distaste for food often continuing after the patient has improved in other respects. The respiratory system is notably free from implication. Complications and sequelæ are infrequent, though loss of strength and general prostration are often rather severe after an attack, and strength is slowly regained.

Onset.—This is sudden in the great majority of cases, being comprised within a few hours. In some well-authenticated instances it is dramatically sudden, the patient being able to point to the actual minute which separated a consciousness of good health from well-marked sensations of fever, headache, general pains, and prostration. Occasionally the patient complains of slight symptoms—headache, prostration, muscular pains—for one or two days before the initial rise of temperature.

Shivering, rarely amounting to actual rigor, is common during the initial rise of temperature.

Temperature.—The average range of temperature had its highest point between 102° and 103°, in a smaller proportion it reached 104°, and cases with temperature above this point were exceptional.

The duration of the temperature was seldom over five or six days, and the prophecy that the temperature would fall at or soon after the end of the fifth period of twenty-four hours after the onset was seldom falsified, though cases of longer duration were observed. In one typical case the temperature lasted two weeks, and fell by crisis, without any complication to account for its long continuance.

The initial rise of temperature was usually moderate, not over 102°, and was in the majority of cases succeeded by a fall on the third, less often the fourth, day, sometimes to normal. This remission or intermission would last a few hours, and would be succeeded by a terminal rise lasting one or two days, during which the temperature would reach its greatest

height, falling by crisis to the normal soon after the patient had appeared to be at his worst.

Hyperpyrexia.—Temperatures over 105° have been noted, but only in a small minority. For instance, a child, aged 3, with extremely developed universal rash, had for some hours during the night a temperature of over 106°, with a weak running pulse, but recovered. A girl, aged 16, had a temperature of 106° in the mouth at the onset of the attack. A girl, aged 6, had a temperature almost 107° shortly after admission into hospital; it fell rapidly after tepid sponging. Several fatal cases in children had hyperpyrexia.

Pulse.—As a rule the pulse is slow in comparison with what would be expected from the rise in temperature. It is common to have a pulse of 75 to 80 with a temperature of 102° or 103° during the first two or three days. Towards the close of the attack the pulse may be more accelerated. There are exceptional cases in which the pulse is accelerated at the outset, and they usually occur in weakly subjects. Several cases have been observed in which the pulse sank to 44 or 48 during or after the second day, with continued pyrexia.

Headache.—This symptom is present in nearly all adult cases, and is usually severe. Post-orbital or frontal headache is the most common form, but there is sometimes also severe parietal or occipital headache, which may be accompanied by hyperæsthesia of the scalp. The eyeballs may be tender to pressure. In some cases there is pain on movement of the eyes, apparently dependent on affection of the ocular muscles. In this condition the patient endeavours to keep the eyes fixed, as any movement of them causes suffering. One case had diplopia accompanied with pain.

Muscular Pains.—Most adults suffer from severe backache, apparently located in the lumbar muscles. This symptom may be present at the invasion, or may appear later than the headache, and is usually more persistent. Often the patient complains of it bitterly. Less frequently the pain is felt more in the interscapular region. Hyperæsthesia of the skin of the back has been observed. Intercostal and abdominal muscular pains are frequent, and are sometimes the symptoms most complained of. Sometimes these pains are specially referred to the scars of old abdominal operations. In many cases muscular pains are felt in the limbs, especially the calves.

Particular Pains.—These are frequent, more especially in or about the lower ends of the femora. Possibly some of the back pains are of this character. They are certainly not in the joints, and are not at all aggravated by movement, and could not be confused with the pains of acute rheumatism. They consist of a dull aching, more or less severe, the sensation suggesting either affection of the bone-ends or of the deep insertions of the muscles or ligaments.

One medical man had marked hyperæsthesia of the skin around one knee-joint.

Sometimes there are shooting pains in the hands and feet.

The very severe limb pains of "break-bone" character have been observed in this epidemic, but only in comparatively few cases.

Initial Eruption.—In many cases there is a flushing of the face, sometimes blotchy, and sometimes spreading into the neck. It appears in the first twenty-four hours, and soon disappears.

Suffusion of the conjunctivæ, and sometimes evident congestion, are very common at the outset. With this there is often some photophobia, slight in degree. These symptoms are less marked than in measles.

Nasal catarrh has been markedly absent.

Sore throat is sometimes complained of, but on inspection only a moderate degree of congestion is observed.

Some observers have noticed a rash on the soft palate.

Tongue.—The condition of the tongue varies between very wide extremes.

In many cases the tongue is rapidly furred, and on the third day may be as thickly coated as that of a neglected typhoid patient in the third week. The furred tongue may become brownish and rather dry on the dorsum, but a markedly dry tongue has not been observed. In many the tongue remains moist, flabby, perhaps teeth-indented, the fur often looking like a moist coat of whitish or yellowish paint.

On the other hand, many patients retain a clean, moist tongue, according to some observers (the majority), and this condition may be present in severe cases, with a high degree of gastric irritability.

Most patients complain of an objectionable taste, variously described as a "fœtid taste," "bitter metallic taste," or "soapy taste," intensified by taking food.

The furring of the tongue, if present, sometimes remains several days after defervescence, and may be very slow to clean. The objectionable taste may disappear still more slowly. The sensation of flavour, particularly of such things as tea and whiskey, is perverted.

Larynx.—A dusky redness of the larynx, nasal mucous membrane, and nasopharynx is characteristic, and may persist for a week or longer after convalescence.

Salivary Glands.—These are not enlarged, and there is no salivation.

Lymph Glands.—These are not enlarged as a rule, but enlargement of the cervical glands is not uncommon. Sometimes the femoral, inguinal and axillary glands are enlarged. Occasionally the glands most enlarged are tender, but the tenderness is not acute. The enlargement is always discrete, and there is no periglandular thickening nor tenderness.

Liver.—Enlargement of the liver and jaundice were not observed.

Spleen.—No clinically recognised enlargement was observed.

Lungs and Bronchi.—The absence of respiratory complications is a conspicuous feature. Sometimes slight bronchitis appears in those previously disposed towards bronchitic attacks. More than one observer has noticed this to be occasionally associated with rusty sputum not due to pneumonia. In a few cases —not phthisical—hæmoptysis was observed of uncertain origin. An irritable cough, probably laryngeal, was sometimes observed.

Several practitioners and others have noticed a

peculiar odour in the patients' breath. Others note a sour, acid smell, probably of the perspiration, but different from that of rheumatism.

Heart.—No endo- or pericardial affection is observed, though præcordial pain is common. There have been a few cases of threatened or actual heart-failure from affection of the heart-muscles or nerves. Cardiac weakness is sometimes noticeable during convalescence. The condition of the heart should be carefully watched, especially in patients past middle life.

Stomach and Bowels.—Complete anorexia is the rule, and there is consequently considerable loss of weight. A few exceptional cases have continued to take ordinary food through the attack, but anorexia is usual even in slight seizures.

Thirst is not marked as a rule.

Vomiting and retching occur in a considerable proportion of the cases, both as early and late symptoms or throughout the attack, fortunately not in the majority. They are the most troublesome symptoms when they occur, and rapidly reduce the patient to prostration. The retching may be frequently repeated without actual vomiting, the nourishment given being retained and only a little clear liquid being brought up.

Gastric pain appears to be present, sometimes quite distinct from that in the abdominal wall. It is much aggravated by flatulence, and may be very acute. A feeling of oppression in the stomach is perhaps more common than actual pain.

Colicky pain with tenderness resembling appendicitis has been observed.

Constipation is the rule, but some few suffer from diarrhœa with mucous or dysenteric evacuations. One patient developed on the fourth day a severe attack of dysentery which gave great anxiety, and kept him an invalid for two months.

Nervous Symptoms.—Headache is present in almost every case, except in children, in whom it is usually slight or absent.

Insomnia is a common symptom, and is often that most complained of. Children, however, are usually drowsy while the fever lasts, and this may be the case in adults.

Persistent and annoying dreams are complained of by some patients.

Delirium is less than would be expected from the intensity of the fever. Very rarely there is severe delirium. Sometimes there are hallucinations. In children convulsions may come on with the initial rise of temperature (rarely later), especially in those under five years. One infant of ten weeks had fatal convulsions with hyperpyrexia on the fourth day.

Depression varies much in different patients. It is usual after the third or fourth day, and during convalescence.

Mania was observed in two cases; hysteria in several.

The poison of dengue appears to have a special action on the peripheral nerves, and doubtless this is the explanation of the very various pains which are so common, often severe, and occasionally unbearable. That this is so is confirmed by the cases of cutaneous hyperæsthesia. Affection of the motor nerves is seldom observed, but the case of diplopia can hardly be otherwise explained. Among the sequelæ peripheral neuritis is noted, though in but few cases.

Hæmorrhages.—Epistaxis occurs sometimes, more often in children, and may be profuse.

Hæmatemesis has been rarely observed in the present epidemic.

Hæmoptysis has been already noted as occurring in a few instances.

Hæmaturia has been observed once or twice in patients with previously healthy kidneys.

Subconjunctival and retinal hæmorrhages are also of rare occurrence.

Several cases of cerebral hæmorrhage took place during attacks of dengue.

One case had subcutaneous hæmorrhage in one leg, accompanied by effusion of blood into the ankle-joint.

Some degree of increased menstrual loss is the rule, and may amount to menorrhagia. The period is also usually accelerated.

Renal Functions.—Albuminuria is not often observed, but there have been several instances of a fair quantity of albumin appearing during the attack, and disappearing soon after defervescence. In one case it did not disappear for two or three weeks.

In some cases the urine is extremely scanty, high-coloured and loaded with urates.

One case is reported of a non-pregnant woman in whom dengue was accompanied by albuminuria and convulsions. The patient recovered, and the albumin disappeared during convalescence.

Another case was a woman over 80 who had previously suffered from high arterial tension and infrequent pulse without albuminuria, but developed 5 per cent. of albumin with the onset of dengue, the albumin disappearing a few days after defervescence.

Several other similar cases could be quoted, and probably albuminuria occurs more often than is suspected. One case of adolescent albuminuria was apparently cured by an attack of dengue.

Terminal Rash.—This appears on the fourth or fifth day, and is often first observed just before or after the crisis. It may, however, appear earlier. In many cases the rash is slightly developed and evanescent. In this epidemic a large proportion of patients, placed by some at one-half or more, have had no rash. There is, however, some difference of opinion on this point, and some would place this proportion lower. This appears to be due partly to the greater diligence displayed by some in searching for a slight and fugitive rash; partly by their recognising slight appearances, which others would not consider to be distinct eruptions. While no rash has been observed in some severe cases, it has been usually absent in mild cases, except in children, in whom its absence is infrequent.

The usual rash is an eruption of minute red spots, smaller, less raised, and brighter red than that of measles, but considerably larger, more discrete, and not so vividly red as that of scarlet fever. On the whole, it has most resemblance to the eruption of rubella. Its favourite sites are the upper part of the chest, back, extensor aspect of limbs about elbows and knees, and the front of the forearms. In a minority the rash affects the palms and soles as a carmine-pink

suffusion, which is extremely characteristic. More rarely the rash in these parts may be punctiform.

In children the rash is occasionally universal, the face included, and largely confluent, so that, although commencing differently, it comes to resemble a highly developed scarlet fever rash.

In most cases the rash on the palms and soles is extremely itchy, that on other areas is less frequently so. The itching persists after the rash has disappeared for a day or two. If the rash is much developed it is followed by desquamation, which is most marked on the hands and feet. In one child with an extreme rash the desquamation was in flakes, the cuticle separating from the fingers and toes like glove-ends.

In some cases the rash varies from the common form. In a few severe cases there has been a dusky rash of discrete spots widely distributed over the trunk and limbs, lasting several days, and somewhat suggestive of measles.

A scarlatiniform rash has been seen in a few cases by several observers.

An urticarial rash: an eruption of urticarial wheals has replaced the usual rash in one or two cases.

A petechial rash: one case is reported.

(No sporadic cases of measles or scarlet fever have been noticed during this epidemic.)

Relapses and Second Attacks.

An attack of dengue during the previous epidemic had no or very little protective influence in this one.

Though dengue usually runs its course within five or six days, cases have occurred in which fever continued for ten days or more, often with a remission, sometimes with two outbreaks of the rash, and these may be looked on as cases of relapse. In others several days or a week of normal temperature intervene. Between these cases and second attacks no line can be drawn.

Second attacks have occurred at intervals up to three months. As a rule these have been severe, and have followed mild attacks, but the contrary has been observed.

Complications.

Pneumonia and pleurisy are very rare complications; a few cases have been observed.

Parotitis has occurred also in a very few. Orchitis was noticed in several cases.

Ulceration of the mucous membrane of the mouth and gingivitis was occasionally noted; in one case this was followed by fatal tetanus. Superficial ulceration of the fauces is also recorded.

Diarrhœa, sometimes with mucous evacuations, is not very infrequent.

Dysuria occurs now and then, but actual retention is very rare.

Pregnancy in most cases has not aggravated the disease, but there has been a tendency to miscarriages and premature labours. In some of the latter instances the children were still-born. Dengue in the puerperium does not seem to have been specially harmful.

Sequelæ.—Boils and carbuncles have not been very uncommon sequelæ. An itchy vesicular eruption on the fingers and palms of the hands is occasionally troublesome. Two cases had widespread eczema. Women frequently complained of shedding of the hair during convalescence, and cases were noticed in which the hair went rapidly grey.

A special proclivity to X-ray burns was noted in two patients after attacks of dengue. Perfectly similar exposures with the same tubes had been previously well borne by them.

Muscular rheumatism, including backache and inframammary pain, was sometimes persistent.

Three cases of synovitis of the knee are recorded.

Mastitis occurred in two cases; neither suppurated.

Venous thrombosis, sometimes ending in suppuration, was a very rare sequelæ.

One case of gastritis is recorded. Also one of diabetes.

An adult (aged 35) who had previously suffered from slight albuminuria and slight cardiac hypertrophy, suffered from repeated attacks of heart-failure after the subsidence of dengue. He had never had such attacks previously.

Another case had persistent and troublesome palpitations without cardiac lesion.

Keratitis and corneal ulceration occurred both as complications and sequelæ, but fortunately in a very small minority of cases. Dr. Lockhart Gibson reports some interesting cases, which are given in an appendix. Asthenopia was sometimes noted for the first time, or aggravated. In one case optic atrophy, probably from retrobulbar neuritis, supervened.

Neuralgias are not uncommon. Slight symptoms of peripheral neuritis were noted by several observers. Usually numbness was the most prominent symptom, accompanied by some paresis, and perhaps by loss of knee-jerks.

Giddiness was sometimes complained of. Nervous depression and loss of memory sometimes persist after the attack. Loss of memory for words, and a tendency to misplace letters in writing, are recorded by two observers. In one or two cases the nervous depression progresses to melancholia, which subsequently cleared up.

Dengue Complicating Previously Existing Diseases.—In nephritis the quantity of albumin is increased, and in a few uræmia supervenes. But many cases of nephritis go through the disease without apparent harm.

One case of diabetes had fatal coma.

Cases of phthisis often go to the bad after an attack of dengue.

Skin diseases are aggravated; so is previously existent neuritis.

Any ulceration, especially varicose, is apt to spread.

Mortality.

In the return kindly furnished by the Government statistician, which will be found appended to this report, ninety-four cases are reported to have died from dengue in Brisbane, among a mean population of 125,672. The great bulk of the mortality occurred during the months of March and April, during which it considerably swelled the the general mortality. If it be assumed that one-half the population were attacked, this would correspond to a case mortality of 1 in 668; if 75 per cent. were attacked, which is probably under the mark, to a case mortality of 1 in 1,000. The mortality was relatively greater in

females than males. The highest mortality occurred at the extremes of life, those under 5 years of age contributing 37·6 per cent., and those over 60 years 35·5 of the total.

The mortality returns probably give an exaggerated idea of the immediate fatality of the epidemic. The overwhelming majority of those attacked are never in a condition to give rise to any anxiety. Some medical practitioners with large practices have seen no deaths, others only a few. In the Brisbane Hospital, out of 566 cases admitted (and therefore, no doubt, selected as being severe cases) there was only one death.

As a result of enquiries we are indebted to several medical men for particulars regarding the fatal cases occurring in their practices, and adding to these those that came under our own observation, we have collected thirty-five fatal cases, of which one occurred in Toowoomba, eight in Ipswich, and the remainder in Brisbane.

Under Five Years.

Children's Hospital: A child, aged 3, developed hyperpyrexia with some convulsive seizures on the fifth day. The temperature resisted antipyretic measures. Death occurred from heart-failure within twenty-four hours.

Dr. Bancroft: A feeble infant, aged 6 months, was seen with a slight rash, temperature of 101°, and vomiting, and died suddenly on the same day.

Dr. Kerr-Scott: A healthy female infant of 10 weeks took convulsions with hyperpyrexia on the fourth day, and died in six hours.

A female infant of 10 months developed bronchitis on the sixth day. Sudden and unexpected death from syncope on the ninth day.

Dr. Brockway: An infant of 5 days developed a copious rash, refused the breast, and died.

Dr. Turner: A boy, aged 2, was seen about the fifth day with a slight rash and great prostration. Died from heart-failure next morning.

A girl, aged 4, who had suffered many months from chronic lead poisoning, but had improved, died of long-continued convulsions, which were probably uræmic. They came on a few days after temperature had fallen.

Dr. Halford: Female twins, aged 11 months, both delicate from birth, bottle-reared. Had been subject to gastro-intestinal disturbances, and contracted dengue about one month before death from exhaustion. Both cases were complicated by staphylomatous ulceration of corneæ.

Dr. Cameron (Ipswich): Girl, aged 4, suddenly seized with fever, restlessness, pains all over. Next morning convulsions, which lasted until death, twenty-four hours after onset. Mother was in bed with dengue, and father had had it a few days before, so that it was inferred that the child was suffering from the same. It was apparently healthy, but had had convulsions on two previous occasions.

Male infant, aged 8 days. Mother suffering from dengue when confined. Baby healthy at birth, suddenly became febrile and died after a few hours' convulsions. Probably dengue.

Male infant, aged 11 months. Severe attack, on third day repeated convulsions, high fever, and death.

Infant of 17 months. Fatal convulsions on second day.

Between Five and Sixty Years.

Dr. Kerr Scott: Female, aged 29. Advanced phthisis, dengue, and exhaustion.

Dr. Love: A stout man, aged 55, who had previous symptoms of cardiac weakness, died of sudden heart-failure shortly after the subsidence of dengue.

A child, aged 8, had persistent vomiting after dengue, and died of exhaustion.

Dr. Thomson: A lad who had been a cellarman, and drank freely, died of cerebral hæmorrhage within forty-eight hours after getting out of bed.

Dr. Hawkes: Woman, aged 28, two and a half months pregnant, had a severe attack of dengue, temperature 103° to 104°, within twenty-four hours had uterine hæmorrhage. When seen on third day had offensive discharge, uterus tender and soft. On fourth day uterus emptied by finger and soft blunt curette. Uterus flabby and almost impalpable, very little hæmorrhage. Did well for three days and then died with symptoms of pulmonary embolism within a few minutes.

Woman, aged 53, who had probably had a fatty heart for some years, on third day had cardiac pain, dyspnœa, acute dilation of the stomach, and died in a few hours.

Dr. Turner: A woman, aged 46, who had been under treatment for some months for anæmia, with subcutaneous hæmorrhages, complicated by hæmaturia at first, and later by albuminuria without blood, had suppression of urine and fatal convulsions on second day after temperature had fallen to normal.

Dr. Halford: Married woman, aged 42, had on fourth day severe abdominal pain and collapse. When seen on the fifth day nothing could be found to account for symptoms; died soon after.

Man, aged 24, died of phthisis accelerated by dengue.

Dr. Cameron (Ipswich): Man, between 30 and 40, had a moderately severe attack, keeping him in bed a week. Two days after getting up had difficulty in walking, inco-ordination of legs, loss of knee-jerks, no impairment of sensation. He was not seen again, but died a week later.

A very stout woman, aged 50, had severe dengue, with persistent vomiting and diarrhœa. Died of heart-failure; probably heart was fatty.

Dr. Faulkner (Toowoomba): Man, aged 35, a baker, had been much overworked owing to illness of employees. Dengue with extremely severe vomiting and diarrhœa, aggravated by injudicious diet; died of exhaustion on the thirteenth or fourteenth day, though his temperature had come down.

Over Sixty Years.

Dr. Kerr-Scott: A man, aged 68, who had suffered from diabetes for several years, became extremely weak and died on the fifth day.

A woman, aged 80, had dengue, complicated by nephritis on the fourth day. Died on the seventh day from heart-failure after almost complete suppression for twenty-four hours.

Dr. Bancroft: A feeble old woman, aged 70, died

THE

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	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	38	—	39
Anæmia	156	30	166
Anthrax	—	—	—
Beri-beri	272	82	319
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	50	—	50
Cholera	3	2	3
Choleraic Diarrhœa	—	—	—
Congenital Malformation	—	—	—
Debility	278	113	295
Delirium Tremens	1	1	1
Dengue	—	—	—
Diabetes Mellitus	—	—	—
Diabetes Insipidus	—	—	—
Diphtheria	—	—	—
Dysentery	129	50	132
Enteric Fever	18	6	19
Erysipelas	3	—	3
Febricula	19	—	19
Filariasis	—	—	—
Gonorrhœa	88	—	90
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	—	—	—
Kala-Azar	—	—	—
Leprosy	262	93	519
(*a*) Nodular	—	—	—
(*b*) Anæsthetic	—	—	—
(*c*) Mixed	—	—	—
Malarial Fever—			
(*a*) Intermittent—	625	1	639
Quotidian	—	—	—
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	55	41	56
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	8	2	8
Malta Fever	—	—	—
Measles	5	—	5
Mumps	5	—	5
New Growths—			
Non-malignant	17	2	17
Malignant	1	—	1
Old Age	26	19	30
Other Diseases	—	—	—
Pellagra	—	—	—
Plague	1	1	1
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	1	—	1
Rheumatism	160	—	177
Rheumatoid Arthritis	—	—	—
Scarlet Fever	—	—	—
Scurvy	1	1	1
Septicæmia	1	—	1
Sleeping Sickness	—	—	—
Sloughing Phagedæna	35	16	36
Small-pox	141	26	151
Syphilis—	—	—	—
(*a*) Primary	157	—	177
(*b*) Secondary	496	31	586
(*c*) Tertiary	—	—	—
(*d*) Congenital	—	—	—
Tetanus	6	5	6
Trypanosoma Fever	—	—	—
Tubercle—	—	—	—
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Disease of Bones	—	—	—
GENERAL DISEASES—*continued.*			
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	1	—	1
Yaws	—	—	—
Yellow Fever	—	—	—

LOCAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Diseases of the—			
Cellular Tissue	103	2	107
Circulatory System—			
(*a*) Valvular Disease of Heart	31	18	31
(*b*) Other Diseases	3	—	4
Digestive System—			
(*a*) Diarrhœa	527	203	538
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	4	1	5
Congestion of Liver	4	—	4
(*d*) Abscess of Liver	3	2	3
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	2	1	2
(*g*) Cirrhosis of Liver	41	22	44
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	1	1	1
(*j*) Other Diseases	117	5	121
Ear	10	—	10
Eye	129	—	164
Generative System—			
Male Organs	105	1	109
Female Organs	24	—	28
Lymphatic System	97	—	100
Nervous System	230	18	254
Nose	3	—	3
Organs of Locomotion	36	1	44
Respiratory System	409	156	433
Skin—	—	—	—
(*a*) Scabies	—	—	—
(*b*) Ringworm	—	—	—
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	29	—	30
(*f*) Other Diseases	607	2	655
Urinary System	55	18	57
Injuries, General, Local	518	8	529
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	—	—	—
Parasites—	358	—	403
Ascaris lumbricoides	14	—	14
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	1	—	1
Tape-worm	—	—	—
Poisons—	—	—	—
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	30	3	30
Surgical Operations—			
Amputations, Major	—	—	—
,, Minor	—	—	—
Other Operations	30	7	32
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	5	—	6

Return of Diseases and Deaths in 1903, at the

District Hospitals, Butterworth, Bukit Mertajam, and Sungei Bakap, Province of Wellesley.

GENERAL DISEASES.

	Admissions.	Deaths.	Total Cases Treated.
Alcoholism	5	—	5
Anæmia	100	41	109
Anthrax	—	—	—
Beri-beri	60	24	65
Bilharziosis	—	—	—
Blackwater Fever	—	—	—
Chicken-pox	—	—	—
Cholera	—	—	—
Choleraic Diarrhœa	—	—	—
Congenital Malformation	—	—	—
Debility	61	16	66
Delirium Tremens	—	—	—
Dengue	—	—	—
Diabetes Mellitus	—	—	—
Diabetes Insipidus	—	—	—
Diphtheria	—	—	—
Dysentery	32	16	34
Enteric Fever	—	—	—
Erysipelas	—	—	—
Febricula	62	—	62
Filariasis	—	—	—
Gonorrhœa	17	—	17
Gout	—	—	—
Hydrophobia	—	—	—
Influenza	—	—	—
Kala-Azar	—	—	—
Leprosy	13	—	13
(*a*) Nodular	—	—	—
(*b*) Anæsthetic	—	—	—
(*c*) Mixed	—	—	—
Malarial Fever—	41	5	41
(*a*) Intermittent—	6	—	6
Quotidian	—	—	—
Tertian	—	—	—
Quartan	—	—	—
Irregular	—	—	—
Type undiagnosed	—	—	—
(*b*) Remittent	2	2	2
(*c*) Pernicious	—	—	—
(*d*) Malarial Cachexia	2	—	2
Malta Fever	—	—	—
Measles	—	—	—
Mumps	—	—	—
New Growths—			
Non-malignant	—	—	1
Malignant	1	1	1
Old Age	2	—	3
Other Diseases	6	1	6
Pellagra	—	—	—
Plague	—	—	—
Pyæmia	—	—	—
Rachitis	—	—	—
Rheumatic Fever	—	—	—
Rheumatism	74	—	80
Rheumatoid Arthritis	2	—	2
Scarlet Fever	—	—	—
Scurvy	—	—	—
Septicæmia	—	—	—
Sleeping Sickness	—	—	—
Sloughing Phagedæna	5	3	5
Small-pox	22	5	22
Syphilis—			
(*a*) Primary	5	—	5
(*b*) Secondary	62	3	65
(*c*) Tertiary	4	1	4
(*d*) Congenital	—	—	—
Tetanus	—	—	—
Trypanosoma Fever	—	—	—
Tubercle—	5	—	5
(*a*) Phthisis Pulmonalis	—	—	—
(*b*) Tuberculosis of Glands	—	—	—
(*c*) Lupus	—	—	—
(*d*) Tabes Mesenterica	—	—	—
(*e*) Tuberculous Diseases of Bone	—	—	—
Other Tubercular Diseases	—	—	—
Varicella	—	—	—
Whooping Cough	1	—	1
Yaws	1	—	1
Yellow Fever	—	—	—

LOCAL DISEASES.

Diseases of the—			
Cellular Tissue	24	2	25
Circulatory System—	—	—	—
(*a*) Valvular Disease of Heart	10	2	10
(*b*) Other Diseases	13	4	13
Digestive System—	—	—	—
(*a*) Diarrhœa	99	47	105
(*b*) Hill Diarrhœa	—	—	—
(*c*) Hepatitis	—	—	—
Congestion of Liver	—	—	—
(*d*) Abscess of Liver	2	—	2
(*e*) Tropical Liver	—	—	—
(*f*) Jaundice, Catarrhal	—	—	—
(*g*) Cirrhosis of Liver	24	16	25
(*h*) Acute Yellow Atrophy	—	—	—
(*i*) Sprue	—	—	—
(*j*) Other Diseases	52	8	52
Ear	6	—	7
Eye	33	—	34
Generative System—			
Male Organs	27	—	27
Female Organs	8	—	8
Lymphatic System	24	—	26
Nervous System	25	9	30
Nose	—	—	—
Organs of Locomotion	20	1	21
Respiratory System	60	24	66
Skin—	—	—	—
(*a*) Scabies	8	—	10
(*b*) Ringworm	1	—	1
(*c*) Tinea Imbricata	—	—	—
(*d*) Favus	—	—	—
(*e*) Eczema	14	1	14
(*f*) Other Diseases	181	—	198
Urinary System	21	5	21
Injuries, General, Local	—	—	—
(*a*) Siriasis (Heatstroke)	—	—	—
(*b*) Sunstroke (Heat Prostration)	—	—	—
(*c*) Other Injuries	157	4	153
Parasites—	—	—	—
Ascaris lumbricoides	—	—	—
Oxyuris vermicularis	—	—	—
Dochmius duodenalis, or Ankylostoma duodenale	—	—	—
Dracunculus medinensis (Guinea-worm)	—	—	—
Tape-worm	—	—	—
Poisons	53	—	53
Snake-bites	—	—	—
Corrosive Acids	—	—	—
Metallic Poisons	—	—	—
Vegetable Alkaloids	—	—	—
Nature Unknown	—	—	—
Other Poisons	—	—	—
Surgical Operations—			
Amputations, Major	1	—	1
,, Minor	—	—	—
Other Operations	14	1	14
Eye	—	—	—
(*a*) Cataract	—	—	—
(*b*) Iridectomy	—	—	—
(*c*) Other Eye Operations	—	—	—

Colonial Medical Reports.—No. 16.—TRINIDAD.

MEDICAL REPORT FOR THE YEAR 1904-5.

By Dr. JAMES A. De WOLF,

Surgeon General.

MEDICAL.

Government Medical Officers.

The usual return respecting medical officers, the nature of their employment, and the amount of leave taken by them during the year is contained in Appendix A.

The following changes occurred in the medical staff:—

Dr. T. G. D. Cooper, supernumerary surgeon at the Colonial Hospital, resigned on June, 8th 1904.

Dr. Hormasji, who was temporarily employed as assistant surgeon at the San Fernando Hospital, resigned on May 31st, 1904.

Dr. Steward, appointed as supernumerary surgeon on special terms at the Colonial Hospital, Port-of-Spain, resigned on November 14th, 1904.

Dr. W. H. Meyer, supernumerary medical officer, resigned on March 4th, 1905, on account of ill-health.

Dr. E. J. Hammond, the senior medical officer of the Service, retired on pension on July 8th, 1904, after thirty-three years of faithful and efficient service.

Dr. F. A. Rodriguez was appointed to act as subsidised medical officer of Santa Cruz, from July 1st, 1904.

Dr. K. N. A. Inniss was appointed a supernumerary medical officer on August 16th, 1904.

Dr. A. Milner, District Medical Officer of Mayaro, died on November 22nd, 1904.

Dr. Charles Howatson acted as supernumerary medical officer from December 14th, 1904, to the end of the year.

Dr. Vilain acted for short periods to replace officers on sick leave.

No appointment has been made to the vacancy in the South Naparima District, the work of which has continued to be performed by the District Medical Officers of the adjoining districts of North Naparima and Oropuche.

On September 9th, 1904, Dr. Meyer, who was temporarily in charge of the Pointe-Pierre district, was obliged to take sick leave, and from that date until the end of the year the work of the district has been performed by Dr. Boucaud, District Medical Officer, Couva, in addition to his proper duties. Owing to the serious illness of Dr. Hewlett, District Medical Officer, Cedros, and the insufficiency of the medical staff, Dr. Guiseppe, subsidised Medical Officer of the Erin-Guapo district, was on September 18th, 1904, placed in charge of the combined districts of Cedros and Erin-Guapo, and has continued to discharge these double duties up to the present time.

Surgeon-General's Office.

There was no change in the staff during the year.

Medical Attendance on the Poor.

There was a gratifying decrease in the number of patients in Port-of-Spain, the attendance being 21,810, as compared with 28,686 the previous year.

The expenditure for medical comforts issued to the destitute also shows a considerable decrease, amounting in Port-of-Spain to £198 5s. 11d., as compared with £312 5s. 10d. the previous year, and £255 13s. 10d. for the Colony, as compared with £376 10s. 3d.

PUBLIC HEALTH.

A.—Remarks on the Prevalence of Certain Diseases.

Malarial fevers were, on the whole, not so prevalent as usual, and the type of the disease was, generally speaking, mild. Several of the District Medical Officers note a greater prevalence of malaria during the dry months of the year.

Two cases of hæmoglobinuric fever, with one death, occurred in Trinidad (Cedros and Mayaro), and ten cases, with two deaths, in Tobago.

The Tobago Medical Officers refer to the insanitary conditions due to the abandonment of many sugar estates and the consequent neglect of drainage as a cause of the extensive prevalence of malaria.

Dr. Robinson, District Medical Officer, No. 4 District, again draws special attention to the necessity, in the interests of the health of the neighbourhood, of having the Betsy Hope Swamp drained.

In the Colony generally, bowel complaints were less prevalent and of less severe type than in former years.

There was an outbreak of dysentery at Siparia in March, which assumed the form of a rather severe epidemic.

This was attributed by the District Medical Officer to contamination of the drinking water. It was the subject of a special investigation, and it is hoped that a source of water supply free from contamination will be found.

There were limited epidemics of—

Influenza, at Arima in February, Guaracara in May and June, North Naparima in January and March. Sporadic cases from time to time at St. Joseph, Diego Martin and Bocas.

Whooping Cough, at Arima from December to March, Toco from May to August, Gran Couva from June to July, Guaracara in June, Cedros from September to December.

The disease was of a mild type and generally unattended by sequelæ.

Varicella.

There was a considerable prevalence in Tacarigua of varicella from April to June, and from April to March, the total number of cases amounting to 68. There were also a few sporadic cases in St. Joseph, Indian Walk and Port-of-Spain, from time to time. It is worthy of note that a large proportion of these cases occurred among adults. With regard to the nature of the disease, however, there was no doubt whatever.

Still Births.

The District Medical Officers of the several districts call attention to the large number of still births, which they attribute to the absence of trained midwives and the ignorance and incompetence of those who officiate in that capacity. The most practical remedy for this state of things would seem to be the offering of a small subsidy by the Government to induce licensed midwives to reside in certain country districts.

Yaws.

Trinidad.—The returns of cases treated in the dispensaries and hospitals are appended.

The number under treatment in the District Dispensaries at the end of the year was 204 as compared with 304 the previous year, being a decrease of 100.

The Arima Yaws Hospital was closed at the end of June.

The total number of cases remaining in hospital and dispensaries at the end of the year shows a decrease of 100.

The number of cases under treatment at the St. Augustin Yaws Hospital at the end of the year was 222.

The total number treated during the year in dispensaries and hospitals shows an increase of 137.

This showing is certainly not as encouraging as I had hoped for. It is, however, to be mainly attributed to the large number of cases brought to light in the Indian Walk district. This is a district of large area, with a scattered population and many isolated villages, and until the year under review searching has been imperfectly carried out.

Dr. C. B. Reid, District Medical Officer of Indian Walk, remarks in his report :—

"The question as to whether yaws is on the increase or not in this district is a difficult one for me to answer at present. I am inclined to think it is not. The apparent increase, as seen from the return, I put down to the excessive zeal displayed by the yaws searcher and the serious and systematic manner with which the subject has been dealt with during the year. The whole district has practically been scoured, and few, I believe, have escaped notice."

All the severe cases were sent to hospital. There is no question as to the good effect of hospital treatment in this disease. This is illustrated by the fact that, of 238 from the Indian Walk District treated in hospital 9 recurred, whereas, of 215 treated in the district 92 recurred. It is the general consensus of opinion among District Medical Officers that the type of the disease is becoming less severe.

Tobago.—At the end of the year the total number of cases remaining under treatment in the hospitals and dispensaries was 466, being an increase of 140 over the previous year. The total number of cases treated during the year was 891, as against 1,037 the previous year, being a decrease of 146. About the middle of the year there was a marked falling off in the number of cases reported. On enquiry I found that this seemed to be largely attributable to the fact that, as the cases became fewer and more scattered in the districts, the labour of searching increased, and it appeared that the one shilling allowed for each case was insufficient incentive to thorough searching. On my recommendation the fee was increased to two shillings, as paid in Trinidad, and as the result of this and the prosecution of delinquents, the number of cases reported again increased considerably.

The District Medical Officers, however, agree in the opinion that there has been a marked decrease in the prevalence of the disease.

Tuberculosis.

This disease continues to prevail extensively in the Port-of-Spain and the country districts, although the mortality for the past year shows a slight decrease. Temporary provision is being made at the Colonial Hospital for the isolation of cases suffering from tuberculosis pending the erection of suitable wards.

It is very gratifying to note that an Association has been formed in the Port-of-Spain for the prevention and treatment of tuberculosis, and that the public, as far as there has been an opportunity to judge, have shown their sympathy with the movement and have indicated a willingness to contribute to its support. Premises have been secured for the purpose of establishing a dispensary for the treatment of such cases, which it is expected will be opened shortly.

It is the aim of the Association, should sufficient support be forthcoming, at a later date to establish a sanatorium for consumptives.

B.—Conditions Affecting the Public Health.

Water Supply.—The District Medical Officers of Manzanilla, Gran Couva, Guaracara, Indian Walk, Oropuche and Erin-Guapo call special attention to the defective water supply, drinking water being generally derived from ponds and pools in the river-beds. There is no doubt that a large proportion of the ill-health prevailing, more especially in the dry season of the year, in these districts, is attributable to this cause, and it is very desirable that some provision be made by the Government, in the centres of population, for storing rain-water, as has been done in Couva, Chaguanas, Morugo and La Lune.

The progress made in installing the sewerage system in Port-of-Spain has been slow. When certain amendments have been made to the Ordinance it is

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the intention of the authorities to put in force the compulsory measures therein provided.

The only places in the country districts where improvement in sanitary conditions is noted by the medical officers are at St. Joseph and Cedros, where there have been extensions of concrete drainage.

The subjoined annexures by the Assistant Medical Officer of Health are appended :—

A.—Précis of the health reports received from the District Medical Officers.

B.—Summary of Mortality in Port-of-Spain.

C.—Report of Infantile Mortality in Port-of-Spain.

INSTITUTIONS.

Colonial Hospital, Port-of-Spain.

The work of the hospital continued to be very much hampered by the insufficiency of the medical staff, owing to the resignation of Drs. Cooper and Steward, and the necessity for the employment of several of the other members to supply vacancies in the medical districts.

The sewering of the main block and three of the other wards has effected a great and much needed improvement. It is hoped that the system will be extended to the other wards at an early date.

San Fernando Hospital.

The central administration block was completed on January 31st and affords much needed accommodation.

The conversion of the old dispensary and clerk's office into private wards, as suggested by the resident surgeon, would supply a much felt want and, as pointed out by him, help to relieve the overcrowding on the male side.

The new operation room in connection with the female wards and an isolation ward have been approved, and will be constructed this year.

District Hospitals.

Couva Hospital was closed for repairs from August 8th to November 30th. A new mortuary and outpatient room were built.

Tobago Hospital.—A new building has been erected giving accommodation for the matron's quarters on the upper floor and ten almshouse inmates below. The main building has been altered internally so as to provide room for 16 male and 16 female patients. The entire accommodation of the institution by these alterations and additions will be increased from 25 to 52 beds; only 10 of the additional beds, however, will be occupied this year.

Lunatic Asylum.

The report of the medical superintendent is appended.

The number of admissions was the highest since the opening of the asylum. It is worthy of note that nearly 50 per cent. of these patients were of foreign birth.

Dr. Seccombe again calls attention to the overcrowding, there being at the end of the year 117 patients in excess of the accommodation. It is hoped that the completion of the ward at the House of Refuge for imbecile and senile cases, and an observation ward at the Colonial Hospital, will afford sensible relief.

Provision has been made also in the estimates for the erection of a portion of the new buildings required at the asylum during the current year.

The tank which received the slop water of the institution has been connected with the main sewer in St. Ann's Road, thereby remedying the nuisance formerly caused by the discharging of its overflow into the Dry River. It is much to be desired that the sewerage system should be completely installed.

Leper Asylum.

There was an increase in the number of inmates at the end of the year of 24. The appointment of a male steward and night watchman has done much to facilitate the administration and improve the discipline of the institution, and since the enclosing of the grounds there have been fewer cases of absconding.

The water supply is still very inadequate. It is hoped that this deficiency will be remedied in the near future.

The male side is becoming overcrowded, and provision will have to be made in the coming year for increased accommodation.

House of Refuge.

The number of inmates at the end of the year showed only a slight increase over the previous year.

It is satisfactory to note that a larger amount of work was done by the inmates, resulting in a profit of $220.54 to the institution.

Quarantine.

During the year the quarantine authority held four meetings.

Sixty-three vessels, with crews numbering 2,439 sailors and 1,041 passengers coming from infected ports, were dealt with under the provisions of the Ordinance.

The amount received for rent of the islands was £215 17s. 1d.

The expenditure incurred in connection with quarantine amounted to £236 1s. 8d.

The result of the Inter-Colonial Quarantine Conference which met at Barbados in April, 1904, was eminently satisfactory, regulations in accordance with modern sanitary science and preventive medicine having been unanimously agreed upon, as also a convention to be submitted for adoption by all the Colonies concerned. It is expected that Ordinances in conformity with these recommendations will shortly be enacted in the various Colonies.

Immigration.

The accompanying digest shows the prevalence, and the incidence on estates, of the chief diseases treated among indentured immigrants.

Prevalence of Disease.—During the year 22,992 cases were treated in the Estate Hospitals, as compared with 27,637 last year, showing a decrease of 4,645 cases.

Malarial fever caused the largest number of admissions to the Estate Hospitals. This disease was generally of a benign type, and occurred mainly on estates in districts (*i.e.*, Oropuche and Couva) in which the natural conditions are most favourable to the causation and spread of it.

Dysentery was somewhat more prevalent than last year. The numbers of cases for the last five years have been 642, 1,059, 948, 667, and 766.

Anæmia and ankylostomiasis shows a total of 1,933, being an increase of 206 cases over last year. As yet no practicable measures have been discovered for reducing the prevalence of this disease.

Of diseases of a communicable type there were :—

Measles	... ...	1 case
Influenza	... ...	69 ,,
Erysipelas	... ...	4 ,,
Tubercle	... ...	7 ,,
Syphilis	... ...	222 ,,
Yaws ...	... ...	10 ,,
Leprosy	... ...	4 ,,

Incidence of Disease.—The chief incidence was on the Couva, Oropuche, and South Naparima group of estates. Malarial fever was responsible for the greatest number of admissions to these Estates Hospitals.

PRECIS OF THE HEALTH REPORTS RECEIVED FROM THE DISTRICT MEDICAL OFFICERS OF THE COLONY.

By Dr. J. R. Dickson.

Assistant Medical Officer of Health.

Port-of-Spain.—The health of the town was good. Sporadic cases of enteric fever and dysentery occurred from time to time. There were two cases of diphtheria in Tranquillity. "Cases of malarial fever were not only less frequently met with, but were of a distinctly less severe type."

Diego Martin.—Apart from a few cases of catarrhal affection, simulating influenza, there was no disease of an unusual nature. A few cases of yaws came under treatment; the type of the disease was less severe than in former years.

Santa Cruz.—The health of the district has been good. Malarial fever, generally of a mild type, was the most prevalent disease. The District Medical Officer calls attention to the excessive number of still births, and attributes a large proportion of these deaths to ignorance and carelessness.

St. Joseph.—Except a few cases of varicella in the month of February, and some sporadic cases of influenza, there has been no disease of an unusual nature. Malaria and anæmia were the most prevalent diseases.

The water supply is good and ample. The drains of the town (St. Joseph) are being concreted.

Tacarigua.—The health of the district has been good. Chicken-pox was epidemic from April to June, and from January to March, a total of sixty-eight cases occurring. The disease was of a mild type. Tuberculosis continues somewhat prevalent. The district medical officer notes: "I wish to draw special attention to the condition about and around the standpipes, so filthy are they allowed to become, and . . . to remain."

Arima.—The health of the district was fairly good. Whooping cough became epidemic in December and continued to the end of March; bronchitis and pneumonia occurred as complications and sequelæ and caused many deaths. Influenza was epidemic in February; digestive diseases and convulsions (in children) were frequent complications. There were no cases of typhoid fever, and a few cases only of dysentery.

The District Medical Officer directs attention to the large number of still births and the high infantile mortality.

The water supply of Arima is ample and excellent.

Manzanilla.—The general health of the district was better than in the previous year. Malarial fever was rather prevalent during the third quarter. Many cases of influenza, and acute lung diseases, occurred in January and February. The yaws returns show a steady diminution in the number of cases of the disease. The water supply continues defective.

Mayaro.—The health of the district has been fairly good. Malarial fever of a benign type was the most prevalent disease, and occurred principally in December and January. Two cases only of yaws came under treatment, one of which was a very recent arrival from Grenada.

Toco.—The health of the district has been good. Whooping cough, of a mild type generally, was prevalent from May to August. In November and December there were several cases of pneumonia.

Chaguanas.—The health of the district was fairly good. "Malaria and anæmia were the most prevalent diseases. Ten cases of pneumonia, four of which were fatal, occurred at Union Village in the month of February.

Couva.—The health of the district has been exceptionally good. Mild cases of malarial fever occurred as usual, but there were very few cases of bowel complaint, especially dysentery.

Pointe-a-Pierre.—The health of the district was good. Malarial fever of benign type was the most prevalent disease.

Gran Couva.—The health of the district has been good. Whooping cough was prevalent in June and July. Cases of malarial fever have been fewer than in former years.

With reference to the water supply, the District Medical Officer notes: "There is a stand-pipe in the village street which is useful in the wet season, but is useless in a drought, as the supply fails in three or four days.

Guaracara.—The health of the district was fairly good. Diseases of a communicable type occurred with the following distribution:—

Dysentery in May and July.

Influenza, of mild type, in May and June, with, in many cases, pneumonia as a sequela.

Diphtheria, one case in August.

Typhoid fever in August, September, October, November, January and February—in all a total of fifteen cases.

Whooping cough in June.

Dysentery was much less prevalent.

The months of highest mortality were August, February and March.

The water supply continues defective, being obtained generally from surface wells and pools in the river-beds.

Princes Town.—The health of the district was good—one case only of enteric fever occurred during the year.

Indian Walk.—The health of the district was good. There was no epidemic prevalence of disease.

Malaria fever, of a benign type generally, was the most prevalent disease.

The month of highest mortality was August.

With regard to water supply, the District Medical Officer notes: "Artificial ponds, a few muddy rivers, and a few springs form the chief water supply."

Two concrete cisterns have been built—one at Moruga, the other at La Lune.

North Naparima.—The health of the district was good. The most prevalent diseases were anæmia, malarial fever, and, during the last quarter of the year, influenza.

Oropuche.—The health of the district showed an improvement over last year.

Malarial fever was the most prevalent disease.

The District Medical Officer remarks: "The district was remarkably free from dysentery until the last month of the year, when a rather severe epidemic broke out in Siparia," apparently traceable to the contaminated water supply. "The water is still derived chiefly from open ponds or from streamlets near the villages, and these are constantly liable to serious contamination.

Cedros.—The health of the district has been fairly good.

Malarial fever was as usual the most prevalent disease, and caused many deaths. One non-fatal case was of hæmorrhagic type.

Whooping cough, confined to Icacos, occurred during the third quarter.

Dysentery prevailed generally to a slight extent.

The District Medical Officer remarks upon the large number of still births, and the high mortality among persons not attended by the medical officer.

Under "causes and conditions affecting the public health" the District Medical Officer notes: "Concrete drainage is almost general in the streets of Beaulieu Village, which is the principal village in the district, and much has been done to improve the natural insanitary conditions of the place and the environs. The water supply is neither good nor abundant, being obtained from ponds, springs, or hills, which are liable to pollution."

Erin-Guapo.—The health of the district showed no improvement over last year. The greatest amount of sickness occurred during the fourth quarter of the year, and this was also the period of maximum mortality. There has been no improvement in the water supply, and the District Medical Officer again urges the necessity for a concrete cistern for the storage of rain-water in St. Francique, the principal village of Erin.

Tobago, Nos. 1 and 2.—The health of the district generally was good. Malarial fever of a mild type was unusually prevalent during December and January.

The District Medical Officer notes: "There were six cases of hæmoglobinuric fever, of which one ended fatally; this one being the only native of Tobago among the six cases, and the temperature in this case rising to 108·4° F. before death."

The water supply is very fair. "The natural springs which are to be found in many places have all been attended to by the Warden's Department, and afford a fair supply of good water to the various villages and settlements in the country districts."

Tobago, No. 3 District.—The health of the district was fairly good. There was no epidemic prevalence of disease.

The diseases most prevalent were endocarditis, malarial fever, intestinal worms and malnutrition.

Malarial fever, of benign type generally, was rather prevalent—an incidence attributed to the large amount of land which has gone out of cultivation.

Three cases of hæmoglobinuric fever, one of which proved fatal, occurred.

The District Medical Officer again directs attention to the hardships entailed on the inhabitants of the district by the limited accommodation of the Scarborough Hospital.

Tobago, No. 4 District.—The health of the district was good. There was no unusual prevalence of any disease. Malarial fever—of mild type—was more than usually prevalent. One case of hæmoglobinuric fever came under notice.

The District Medical Officer again refers to the large number of rodent and specific ulcers, and to the necessity for the hospital treatment of these cases. Under "conditions affecting the public health," the District Medical Officer remarks: "I would again point out that it is a matter of great regret that certain large swamps, *e.g.*, Betsy's Hope Lagoon, could not be drained as of yore, and thus ensure from its pestilential odour, and certainly its malarial breeding possibilities, the wide area adjoining. I am glad to record something in the nature of individual effort in this direction by the owner of Kendal Place Estate."

TABLE OF MONTHLY MORTALITY.

Month	Male	Female	Nos.	Rate per 1,000
April	70	61	131	26·64
May	66	52	118	24·
June	81	65	146	29·69
July	86	70	156	31·73
August	95	62	157	31·93
September	75	73	148	30·10
October	88	66	154	31·32
November	71	52	123	25·02
December	80	64	144	29·28
January	66	58	124	25·22
February	63	46	109	21·8
March	67	61	128	25·6
Total	908	730	1,638	

Summary of Mortality in Port-of-Spain for the twelve months ended March 31st, 1905.

	M.	F.	Total.
No. of Deaths of Residents	908	730	1,638
Death Rate	—	—	27·76
Death Rate for twelve months ended March 31st, 1904	—	—	34·2

The highest mortality occurred in August, 1904; the lowest in February, 1905.

The above Table details the monthly mortality.

The principal causes of Death were:—

	Nos.	Rate per 1,000.
All Tubercular Diseases	244	4·13
Pulmonary Tuberculosis	197	3·34
Lung Diseases (non-Tubercular) ..	87	1·47
Acute Diarrhœal Diseases	124	2· 1
Chronic Diarrhœa	7	·12
Dysentery	12	· 2
Malarial Fever	32	·54
Typhoid Fever	29	·49
Chronic Kidney Disease	73	1·24
Cardiac Disease (Organic)	66	1·12
Cerebral Hæmorrhage	2	-
Whooping Cough	5	
Influenza	1	
Still Births		
Puerperal Septicæmia	5	
Leprosy	6	
Malignant Disease	22	·37
Puerperal Eclampsia	6	
Liver Abscess	3	
Croup	3	
Tropical Pemphigus	1	
Tetanus	4	
Diphtheria	1	
Erysipelas	2	

The rates are calculated for all classes of the population.

Of deaths from Pulmonary Taberculosis—19 occurred in April, 20 in September, 24 in October, 1904; and 23 in March, 1905. Of Lung Diseases (non-Tubercular), 15 occurred in May, 11 in July, and 10 in August. Of Acute Diarrhœal Diseases, 16 occurred in April and 26 in June.

Deaths from Communicable Diseases (Pulmonary Tuberculosis excepted.)

	Deaths.
Typhoid Fever	29
Whooping Cough	5
Influenza	1
Puerperal Septicæmia	5
Leprosy	6
Diphtheria	1
Erysipelas	2

REMARKS.—The months of highest mortality were July, August, and October—the maximum mortality being attained in August.

(2) Diarrhœal Diseases were most prevalent during the months of April and June.

(3) Deaths from Tubercular Diseases amounted to about one-sixth of the total deaths.

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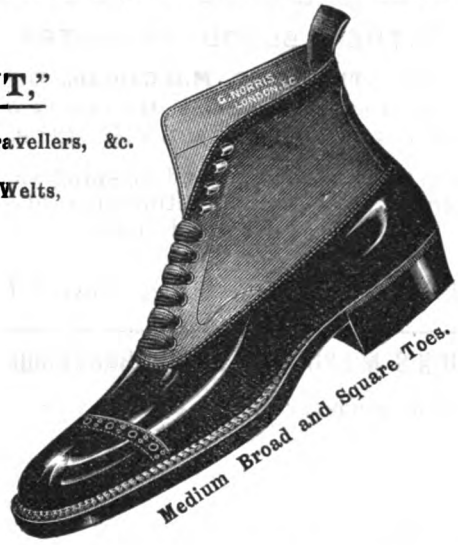
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from cerebral hæmorrhage; had had an attack some years previously.

A feeble old man, aged 70, subject to fainting attacks, died after a week's illness.

A case, aged 75, suffering from cardiac disease, died of syncope.

Dr. Thomson: A feeble old woman who had had a weak heart, died suddenly.

Dr. Hawkes: Female, aged 78, had had mitral disease with enlarged, degenerated heart. On fourth day had an anginal attack, followed by a fatal seizure a few hours later. Urine albuminous before the dengue for some time.

Dr. Halford: Woman, aged 75, subject to chronic bronchitis and dilation of right heart; gradually developed broncho-pneumonia, and died about three weeks after contracting the infection.

Dr. Cameron (Ipswich): Female, aged 74, severe attack, persistent, uncontrollable vomiting, then diarrhœa.

Male, aged 63, healthy; dengue and diarrhœa, finally passing almost unmixed blood; ill two weeks.

Some General Remarks on Dengue.

In its occurence in wide epidemics, its rapid diffusion, the large proportion of the population attacked, and very closely in its symptoms, and their comparatively short duration in most cases, dengue closely resembles influenza.

The usually sudden, sometimes instantaneous onset, the severe headache, backache and limb pains, the pyrexial symptoms, and many of the complications and sequelæ are common to both. The rash of dengue, which is, however, not a constant symptom, is sufficiently distinctive, but of even more importance is the almost invariable absence of catarrhal symptoms of the respiratory tract, and the extreme rarity of pulmonary complications.

At the outset of an epidemic of dengue, it is very commonly mistaken for influenza, and often it is not until the practitioner has seen several cases with a rash that he revises his opinion. In future, supposed outbreaks of influenza occurring in Queensland during the hot season will be rightly regarded with suspicion.

The initial symptoms of yellow fever, a disease fortunately unknown in this part of the world, closely resemble those of dengue as far as the stage of remission. In dengue, too, there is a comparatively slight but real tendency to hæmorrhages of various kinds, including hæmatemesis.

In Brisbane the symptoms of dengue have been observed free from any complication with malaria. We understand that in the North of Queensland some confusion has occurred from the intercurrence of the two diseases.

Judging from the experience of our two epidemics, and from those recorded elsewhere, dengue, like other infectious fevers, appears to vary somewhat in type. The proportion of severe cases, and the relative frequency of many of the symptoms and complications are not always the same, but dengue appears to be for all that a disease as distinctive, and as easily diagnosed when it prevails in the epidemic form, as the other exanthemata.

Appendix I.

Statistical Office, Brisbane,
June 21st, 1905.

Sir,—In accordance with your personal request, I have much pleasure in quoting particulars relating to the mortality from dengue fever during the first five months of this year, as recorded in this office. The details are as follows:—

Metropolitan Area (10 Miles).

Month	Population, Dec. 31, 1903	Total Deaths	Deaths from Dengue Fever					
			Under 5	5 to 20	20 to 40	40 to 60	Over 60	Total
January	125,672	M. 76	..	..	..	..	..	..
		F. 40	..	..	..	..	..	
February ..		M. 63	..	..	1	..	1	2
		F. 55	..	..	..	..	..	
March		M. 85	2	..	2	..	10	39
		F. 96	11	1	2	4	7	
April		M. 81	11	..	4	1	6	43
		F. 61	5	3	2	4	7	
May		M. 68	1	..	1	..	1	9
		F. 57	5	..	..	..	1	
Total		M. 373	14	..	8	1	18	..
		F. 309	21	4	4	8	15	..
		682	35	4	12	9	33	93

I have the honour to be, Sir,
Your obedient servant,
(*Signed*) Thornhill Weedon,
Government Statistician.

Dr. A. J. Turner,
Wickham Terrace, Brisbane.

P.S.—One death from dengue, that of a male, aged 60, was reported in June; none in July.

Appendix II.

Dr. Lockhart Gibson reports three cases of keratitis during dengue, and five cases (three adults and two children) occurring immediately subsequent to the attack or during convalescence.

The latter he considers to be examples of "keratitis neuro-paralytica" from neuritis of the corneal terminations of the ciliary nerves. A triangular area, with its base at the corneal margin and its apex at or beyond the corneal centre, is involved, and becomes insensitive. Some of the cases are serious, and all are extremely slow in recovering, owing, doubtless, to persistence of the neuro-paralytic state of the cornea.

In the cases of keratitis observed during the actual attack, in each case an irregular and prolonged one, he considers that, in addition to keratitis neuro-paralytica, there was infective ulceration of the cornea, probably directly induced by the infective organism of dengue. Of four eyes involved, one cornea, an adult's, became entirely destroyed. In two other cases, twins aged 10 months died from prolonged attacks of dengue, with recurring hyperpyrexia. Prior to death one cornea of one became staphylomatous, and each cornea of the other had a large perforation, due to the formation and separation of a slough.

Appendix III.

Differential Blood Counts in Dengue.

		Lymphocytes	Large Mononuclear	Polymorph.	Transitional	Eosin	Amœboid
Dr. Lore.							
F., aged 22.	First day ..	3·3 %	7·3	81·3	..	..	8
M., aged 36.	First day ..	29·6	6·	61·	3	..	..
F., aged 32.	Second day	29·	8·6	61·	..	..	..
———	Fourth day	16·7	20·	48·3	2·9	·5	11·6
F., aged 25.	Fourth day	18·4	19·6	58·6	..	·4	2·2
Dr. Tyrie.							
M., aged 41.	Third day ..	23	20	54	..	8	..
F., aged 21.	Second day	17	25	57	..	1	..
F., aged 40.	Third day ..	26	17	57	..	0	..
M., aged 15.	Second day	8	30	60	..	2	..

The decimal fractions have been adjusted.

Appendix IV.

Dr Wield: The earlier cases of the epidemic seem to have been absolutely limited to the western part of the district of Spring Hill. This part of the city is comparatively high above sea-level, is fairly densely populated, and is one of the oldest divisions of Brisbane.

Two sisters living in the highest part of Fortescue Street were attacked on December 28th and 29th respectively. The fact that a brother had lately arrived from Port Darwin gave credence to the theory that he had introduced the infection, but enquiry produced no evidence to prove it. He had not suffered from dengue before or during his voyage, and since his arrival in Brisbane on December 4th had been in good health.

From this first house the medical attendant traced the spread of the disease as it occurred among his own patients. A house in the same street, and almost directly opposite, had its first case on January 8th. One just behind "House No. 1," situated in George Street, the street parallel to and west of Fortescue Street, had a case on the 12th; while another behind, and near to "House No. 2," and situated midway between the east side of Fortescue Street and Little Edward Street, had cases beginning on the 13th; and the nearest house to it in Little Edward Street showed the same illness on the 17th. These five houses were within a radius of about one hundred yards, and almost in a direct line from east to west. On the 26th a case occurred in Billet Street, still in Spring Hill, but half a mile further east. The patient first attacked there was found to have been in service in "House No. 1," and had doubtless brought the infection from there. On the same day another case occurred in George Street, next door to "House No. 3"; and on the 31st a case in Douglas Street, almost a continuation of Little Edward Street, was seen, and here the infection was traced to the visits of a relative from the house in Little Edward Street already mentioned.

From these foci the further spread was rapid. Soon every other house in Spring Hill had its cases, and their convalescents spread the disease through every part of the city.

Dr. Love: Eleven houses furnished cases in January, and of these ten were in Spring Hill. After February 9th cases appeared to be generally distributed in other suburbs.

January 18th.—Fortescue Street, Spring Hill.
,, 19th.—George Street, Spring Hill.
,, 19th.—Confederate Street, Red Hill.
,, 20th.—Terrace Street, Spring Hill.
,, 24th.—Fortescue Street, Spring Hill.
,, 24th.—Berry Street, Spring Hill.
,, 26th.—Berry Street, Spring Hill.
,, 27th.— Leichardt Street, Spring Hill.
,, 27th.—Little Edward Street, Spring Hill.
,, 30th.—Downing Street, Spring Hill.
,, 31st.—Wedd Street, Spring Hill.

Dr. Carvosso: Seven houses infected in January—all in Spring Hill.

January 23rd.—Leichardt Street.
,, 25th.—Leichardt Street.
,, 27th.—Leichardt Street.
,, 28th.—Corner of Leichardt and Boundary Streets.
,, 29th.—Hope Street, Spring Hill.
,, 30th.—Upper Edward Street.
,, 31st.—Boundary Street.

Dr. Marks observed two isolated cases long before any recorded by the previous observers. In January his experience coincides with them, but cases outside Spring Hill were observed towards the close of the month.

November 24th.—Gotha Street Valley.
December 2nd.—Nicholas Street, Swan Hill.
January 11th.—Fortescue Street.
,, 15th.—Fortescue Street.
,, 19th.—Parish Street, Spring Hill.
,, 19th.—George Street, Spring Hill.
,, 19th.—Fortescue Street.
,, 19th.—Leichardt Street.
,, 21st.—Leichardt Street.
,, 23rd.—Isaac Street, Spring Hill.
,, 24th.—Fortescue Street.
,, 24th.—South Brisbane Gas Works.
,, 25th.—Ellis Street, Kangaroo Pt.
,, 25th.—Windsor Road.
,, 25th.—Enoggera Police Station.
,, 26th.—Fortescue Street.
,, 28th.—Cordelia Street, South Brisbane.
,, 29th.—Leichardt Street.
,, 29th.—Wedd Street.

Appendix V.

Hospital for Sick Children.—Resident staff (including nurses, servants, &c.) 41; attacked 36.

Diamantina Hospital for Chronic Diseases: Resident staff, males 6, attacked 4; females 20, attacked 19. Patients, males 42, attacked 26; females 37, attacked 25.

Lamington Hospital for Women: The whole of the nursing staff (7), all the patients (9), and domestics (2) were attacked.

	Total No.	Attacked	Percentage
Resident Staff of three Hospitals	74	66	89·2
Wholesale and Retail Butchering Firm (town employees) ...	124	114	91·9
Ditto Woolcombers at Belmont...	42	30	71·4
City Warehouse	65	58	89·2
City Clothing Factory	471	435	92·4
Newspaper Literary Staff ...	30	28	93·3
Grammar School Boarders and Resident Masters	41	40	97·6

	Totol Employees	Total absent from dengue	Per-cent.	Aver. No. of days absent from work
City Warehouse ...	418	374	89·5	4·11
City Office of Bank ...	76	62	81·6	6
Gas Works (outdoor employees)	48	31	64·6	—
Officers in the Public Service in Brisbane (exclusive of Education Department and Railways)	993	732	77·1	6·5
Commissioner for Railways' Offices, Brisbane	96	87	90·6	7·6
Defence Force, Brisbane	—	88	—	7·85
Tramway Motormen and Conductors ...	347	311	89·6	8·76

MOUTH-PARTS OF BITING FLIES—PRELIMINARY NOTE.

By Lieut.-Col. G. M. Giles, I.M.S. (Retd.)

In all biting diptera, which I have examined, the actual piercing apparatus is constructed on the same general plan; the only essential parts of the structure being two median processes of the headwall, known as the labium, or upper lip, and the hypopharynx. In the true flies, these parts alone are thrust into the skin, as the foot-jaws are represented only by a pair of lobes from which spring the palpi, but the gnats and sand-flies have a more complicated, but less evolved, biting apparatus in which the labium is supplemented by two pair of lancets, supposed to represent the mandibles and maxillæ of manducatory insects, though the function of the maxillæ is that of fixation rather than piercing. In all, however, the essential piercing agent is the labium, which is formed exactly on the model of the grooved needle used by surgeons for exploratory diagnosis. The groove is on its ventral surface, and though often capable of passive flexion and extension, the labium is never a muscular organ, and so can pierce only by the thrust of the head, or by being forced in by the contraction or retraction or some organ of fixation. The hypopharynx, on the other hand, is too delicate for use as a piercing agent *per se*, and is simply carried into the wound under the protection of the groove of the labrum. In reality, it is the duct of the salivary or poison gland, produced into an elongated tube, nearly equalling the labrum in length. It is, however, something more than this, as though soft and extensile, it has sufficient stiffness to lie snugly along the groove of the labium, and is further furnished with wing-like lateral processes which fit to the margins of the groove of the labium, and so convert it into a complete tube, through which the blood of the host is drawn into the insect's mouth.

The extreme delicacy of such an apparatus, depending for penetration on its exquisite sharpness rather than on force, necessarily demands very efficient protection when not in actual use, and this is uniformly provided for by the adaptation of the lower lip, or labium, into an efficient sheath.

That it is ever concerned in the actual work of penetration is more than doubtful, though in *Stomoxys* certainly, and probably in the tsetse-flies, it acts as an organ of fixation. It has been repeatedly asserted that, in these forms, the lower lip is actually thrust into the wound, but I am convinced that this is a mere optical delusion, like that of the stage dagger, which falls back into the hilt when the blow is struck. That the labellæ, or terminal lobes of the lower lip of *Stomoxys* or *Glossina* might abrade the skin, as a leech does, is conceivable, but anything like rapid penetration is clearly out of the question, and any one who has been bitten by one of these flies knows that the deed is done suddenly and instantaneously. Moreover, a close examination of the teeth, with which the labellæ are armed, shows that while admirably adapted for anchoring themselves to the skin, they are so placed that it is practically impossible for them to act as cutting instruments. Further, in *Stomoxys* at least, they are provided with muscles, which fit them to act as clawing anchors, but which would be quite purposeless on the assumption that they are cutting organs. In the mosquitoes, however, the action is gradual, and appears to be affected by the alternate action of the labrum and mandibles, as piercing, and of the maxillæ as holding organs, and, in this case, we know that the sheathing labium is got out of the way by being bent into a bold loop, to act as a guide for the group of lancets. In *Stomoxys*, the labium is so bulky as to be almost clumsy, and though grooved on its upper side, for the protection of the piercing organs, consists essentially of a mass of longitudinal and oblique muscles, enclosed in a chitinous envelope, which is transversely plicated, like the body of an accordion. When the enclosed soft parts have been removed by means of caustic soda, the labium of this fly can be drawn out and shortened by handling it with the dissecting needles, exactly like the familiar musical instrument; and its powerful musculature can obviously serve no other purpose than that of shortening the organ, while its extension is equally provided for by the erectile action of air forced into the large air cavities that occupy the spaces between the muscles.

In addition to this, a further retractile action is provided for by means of muscles inserted into the pair of chitinous rods or "fulcra," on which the entire organ is supported, whereby it can be drawn back into the loose erectile tissue which forms the lower part of the head. My study of *Glossina* is far from complete, but the mechanism appears to be essentially the same, though in this form the movement is mainly effected by the retraction of the fulcra, as the musculature of the otherwise rod-like labium is confined to a bulbar enlargement at its base. The result is, however, I believe, the same: the insect fixes itself to the skin by means of the retractile claws of the labellæ, and the sheath is then forcibly shortened and drawn back,

so that the delicate needle, supported in its groove, is protruded, and forced into the tissues of the victim. In all these forms, the gnats included, suction is effected by the pumping action of an expansion of the pharynx contained within the head, which can be actively dilated by means of powerful muscles.

In the true flies the food passes from the pharynx into a large, thin-walled crop, placed in the anterior part of the abdomen, from which it is regurgitated, little by little, through a valvular organ, known as the proventriculus, into the mid-gut for leisurely digestion. In the gnats, however, the crop has ceased to function as such, and is transformed into a pneumostatic organ by the enormous development of the tracheal supply of its walls, so that the increase of the insect's weight, when heavy with food or eggs, can be met by a proportionate increase of its bulk. All forms are furnished with modified salivary or poison glands, which discharge by a common median duct at the extremity of the pharynx directly into the tissues of the victim. The action of the secretion is, no doubt, to keep the blood fluid and stimulate its flow, but repeated personal experience has convinced me that, in the mosquitoes at least, its primary action is anæsthetic, and that the subsequent irritation does not, as a rule, commence until the insect has flown safely away.

"Journ. Amer. Medical Association," September 2, 1905.

I.—Cysts of the Spleen. W. A. Bryan, M.D.

Bryan classifies splenic cysts into: (1) Dermoid cysts characterised by being lined by epithelial cells. (2) Simple serous or blood cysts, believed usually to be due to extravasation of blood, which has taken place either immediately beneath the capsule or in the substance of the spleen. (3) Echinococcus cysts. Splenic cysts when small present no symptoms, but as they advance in size and attain adhesions, their presence is indicated by pain and fulness in the left hypochondrium. Of 17 cases, of which careful notes are available, 5 were ascribed to injury, 5 to malaria, and in 2 cases malaria and injury were recorded.

Treatment.—Splenectomy is called for when the splenic tissue, owing to the cyst, is considered organically useless. When adhesions forbid complete removal, and when the cyst has not destroyed the splenic tissue altogether, the sac must be opened and drained. Exploratory punctures of the spleen are to be condemned in cases of cysts of the organ.

II.—Indications for the Removal of the Pathologic Spleen. B. B. Davis, M.D.

Davis, in his summary of indications for removal of the spleen, states:—

(1) Splenectomy is contraindicated in leukæmia, amyloid spleen, hypertrophy secondary to hepatic cirrhosis, secondary malignant disease, and in essential anæmias.

(2) Splenectomy is indicated in cysts, benign tumours, tuberculosis, sarcoma, rupture when extensive, malarial spleen, and in splenic anæmia, when the organ is very large and other treatment fails.

In wandering sleen, splenectomy is usually preferable to splenopexy. In abscess of the spleen drainage is preferable to removal of the organ.

Business Notices.

1.—The address of the Journal of Tropical Medicine is Messrs. Bale, Sons & Danielsson, Ltd., 83-91, Great Titchfield Street, London, W.

2.—All **literary communications** should be addressed **to the Editors.**

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THE

Journal of Tropical Medicine

December 15, 1905.

IS MALTA FEVER PECULIAR TO MALTA?

The name Malta fever has been regarded as one of those irregularities in regard to nomenclature with which we are familiar. Up to quite recent years almost every district or even town in warm countries had its own specially named form of illness which was regarded as specifically belonging to the place. Since the parasites have been discovered, and the diseases have been submitted to accurate tests, there are but few of the names we are familiar with that will stand the criticism. "Rock fever," "West Coast fever," "Delhi boil," "Biskra button," "Hong Kong dog," "Shanghai fever," for example, have no title to the geographical limits placed upon them by their baptismal names, and there are no doubt many others that will disappear in time. The name Malta fever has been similarly dealt with, but it is possible that in this disease, at least, we

have gone too far. Malta fever being considered a term too restricted in its meaning, the name Mediterranean was given the disease, and yet again Undulant fever advanced it to a more general platform. Reports from many countries far from Mediterranean shores indicated that the fever in question prevailed there, and cases of Malta fever have been reported from Gibraltar, almost all the islands of the Mediterranean, many parts of Italy, Greece, Turkey, Palestine, from several parts of Africa from Algiers to Zanzibar, from a dozen places in India, from Southern China, Philippines, and Fiji. In the Western Hemisphere also cases are reported from the Mississippi valley, Cuba, Puerto Rico, Venezuela, Brazil, and Monte Video. Staff-Surgeon E. A. Shaw, R.N., has shown that many of these reports are fallacious. The diagnosis has been in the majority of instances made upon clinical phenomena alone; the confirmation either by serum diagnosis or recovery of the *Micrococcus melitensis* during life or after death being altogether wanting.

One would have expected to find cases of Malta fever in the Italian and French Mediterranean littoral, but in not one instance have investigations by Staff-Surgeon Shaw confirmed the presence of Malta fever. The Neapolitan fever had been long suspected to be of the nature of Malta fever, but scientific tests have disproved the assumption. It would therefore seem that the belief that the fever with which the name Malta is associated had a wide geographical distribution is not true. It would even appear that the name Mediterranean is not deserved, for in none of the islands or towns on the seaboard of the adjacent continents has the disease been proved to exist endemically. The name may be an unfortunate one, but in this instance the local name would seem appropriate if not scientific, for there is every evidence to show that Malta fever is, to say the least of it, infrequent and rare elsewhere than in Malta.

Recent and Current Literature.

A tabulated list of recent publications and articles bearing on tropical diseases is given below. To readers interested in any branch of tropical literature mentioned in these lists the Editors of the JOURNAL OF TROPICAL MEDICINE *will be pleased, when possible, to send, on application, the medical journals in which the articles appear.*

"Journ. Amer. Medical Association," August 19, 1905.

(1) Status of Medical Affairs in the Philippine Islands. John R. McDill, M.D., Manila.

(2) The Elimination of the Mosquito. A. H. Doty.

(3) Ankylostomiasis or Uncinariasis. T. M. Russell Leonard, L.R.C.P., L.R.C.S.(Edin.), Grenada.

Leonard states that the chief difference between the *Ankylostoma duodenale* (the Old World variety) and *Ankylostoma* or *Uncinaria americana* (the New World variety), so named by Stiles, consists in the size and armature of the mouth. The *A. duodenale* is larger and possesses two pairs of hook-like ventral teeth and one pair of dorsal; the *A. americana* is smaller and possesses two pairs of ventral plates or lips, and one dorsal pair. In Grenada the large majority of cases show the Old World parasite. The disease occurs more frequently in country villages than in the large towns, owing chiefly, no doubt, to the fact that fæces are there deposited on the earth among the bananas and cocoa trees.

In every case of ankylostomiasis amongst natives notified by Leonard pigmentation of the tongue was observed.

He is inclined to attribute the black on the tongue to (1) blood changes in which the hæmoglobin is disintegrated; and (2) disturbance of the nervous system by the toxin produced by the parasite.

Treatment.—A saline aperient at 10 p.m. on the night prior to administration of the thymol is given. The following morning a pint of milk is given and two hours afterwards the thymol.

The drug is exhibited in cachets, 5 grains for a child and 40 grains for an adult, and one cachet is taken every hour till 15 grains are given to the child and 120 grains to the adult. No food is allowed for four hours after the last cachet, when a saline aperient is again taken. The aperient used is sodii sulph. and mag. sulph., āā ʒiss., aqua ad ʒii. for a dose. Beyond some slight dizziness and a sensation of fainting, the administration of thymol has caused no untoward symptoms in Leonard's practice.

The prophylaxis resolves itself into (1) prevention of water infection; (2) prevention of soil infection; (3) treatment of all cases of disease.

(4) A Case of Ainhum. F. Wheatland, M.D.

Wheatland reports a case of ainhum in a negro woman, aged 53, born in Queen Anne County, Maryland. Her father, partly Indian, had lost two toes when about 23 years of age; the cause unstated. The patient had lost the little toe of the left foot after about four years from the first appearance of the constriction at the root of the toe; the right little toe presented, at the time of the report, a deep sulcus round its root. A case of ainhum was reported by Dr. Brayton in the *Journ. Med. Assoc.* of July 8th, 1905.

"Journ. Amer. Medical Association," August 5, 1905.

PFEIFFER'S GLANDULAR FEVER—DRUESENFIEBER.

Glandular fever (Pfeiffer) is ushered in with rigors, headache, pain in the throat and increase of temperature. Soon after the initial symptoms the cervical glands, more especially those around the sterno-mastoid muscle, are enlarged. During the course of the disease acute hæmorrhagic nephritis occurs, and the spleen and liver enlarge. The glands remain discreetly enlarged, rather hard and not very tender. There is eruption on the skin or mucous membrane of the mouth. After three to five days the throat symptoms and feverishness disappear, but the swelling of the glands remains, usually for a week. A death from the disease has not been recorded.

The treatment recommended is: Unguentum Credé (collargol 15, adeps benzoata 75, cera alba 10) applied to neck glands, and the usual treatment for nephritis.

Notes and News.

MEDICAL COLLEGES IN THE UNITED STATES OF AMERICA.—According to the returns for 1904-5, there are 162 medical colleges in the United States, with 26,147 students.

ANISEED AS A GALACTAGOGUE.—Burzagli (*Gazz. degli Osped.*) recommends 25 per cent. infusion of aniseed as a galactagogue. A litre of the infusion is to be drunk during the twenty-four hours, and the breasts fomented with the infusion continuously for some days. It may be noted in this connection that systematic fomentation of the breasts is a good means of promoting the flow of milk even without the addition of aniseed; whilst also copious draughts of plain water or milk are useful adjuncts. It may be the aniseed plays but a small part in producing the flow, but suggestion helps in this physiological act as in others.

JAPANESE MEDICAL MEN AND BRITISH REGISTRATION.—A communication has been received by His Majesty's Government requesting on behalf of the Japanese Government "that steps may be taken so that Japan may be recognised as one of the countries to which the Medical Act of 1886 applies, thus enabling Japanese medical practitioners to practise medicine in the Straits Settlements as well as in other parts of the British Empire."

WELFARE WORK.—The endeavours of Messrs. Burroughs Wellcome and Co. to promote the moral, mental and physical betterment of their people have received recognition at the Liége International Exhibition, just closed. A special gold medal was conferred upon them for the "intellectual and moral development of workers."

SHEFFIELD UNIVERSITY is the latest addition to the growing list of English universities.

Reviews.

A PRACTICAL GUIDE TO COOKERY IN WEST AFRICA AND THE TROPICS. By Sister COCKBURN, late Colonial Nursing Service, Sierra Leone, West Africa. London: The Scientific Press, Ltd., 28 and 29, Southampton Street, Strand. Pp. 160, price 3s. net.

The Scientific Press has published several excellent books on hygienic lines, and the present volume will prove one of the most useful. Sister Cockburn has not only given recipes for invalid cooking, but describes how food may be prepared for healthy folk. There can be no doubt that lack of ability to obtain dainty food is a great drawback to life in the Tropics. The materials are limited to an extent impossible for people in Britain to comprehend; beef and mutton, if available at all, have neither the tenderness nor the nutritive value of home-grown meat, and unless carefully prepared become repugnant to the palate and impossible to digest. Fish in the Tropics has not the flavour of fish from British waters, and there are but few edible varieties.

These drawbacks Sister Cockburn tells us how to overcome, and her culinary suggestions are invaluable. Fowls although plentiful, are apt, from the frequency with which they appear on the table in all tropical countries, to pall upon the appetite, but the fowl sauté, pilan, pooloot, Ashanti fowl, and Spach-cock dishes described go a long way to relieve the monotony of this staple article of diet. Bananas are plentiful, of course, in West Africa, but the banana cream, fritters, and trifle which Sister Cockburn tells us how to prepare are welcome additions to the table. Such attractive names for dishes as Accra wafers, African snowballs, Bonny soup, Cape fillets, Cape goose, Gambia soup, Kohl rabi, Lagos pudding, Mango fool, Teneriffe pudding, Sherbro soup, and others, afford a plethora of change which must be appreciated highly by those who have to put up with native cooks and their cookery. The fruits and recipes given in the book are useful for any household, but for tropical residents they must prove especially serviceable; and if followed will not only reduce the monotony of the meals which is apt to prevail to an inordinate extent in warm countries, but will prove a potent factor in preserving health and preventing disease.

A MANUAL OF CLINICAL CHEMISTRY, MICROSCOPY AND BACTERIOLOGY. By M. KLOPSTVOCK and A. KOWARSKY, of Berlin. Translated by THEW WRIGHT, M.D. Rebman Ltd., 139, Shaftesbury Avenue, London, 1905. Pp. 296, price 8s. net.

This book, which has been popular in Germany for some time, should prove useful to all English-speaking medical men. It is concise, practical, and thoroughly up to date. For medical men in the Tropics we know of no work of the kind which so completely meets their special wants.

A PLEA FOR THE MORE ENERGETIC TREATMENT OF THE INSANE. By CHARLES WILLIAMS, L.R.C.P., L.R.C.S. H. J. Glaisher, 57, Wigmore Street, Cavendish Square, London, 1905. Pp. 51, 1s. 6d. net.

This book will serve to stimulate medical men to consider whether the lethargy which has so long obtained, in regard to the treatment of the insane, might not with advantage be laid aside.

NEW BOOKS ON GENERAL LITERATURE RELATING TO THE COLONIES AND INDIA.

The Empire and the Century. A series of Essays on Imperial Problems and Possibilities. By various writers. 8vo, pp. xxiii.-895. London: John Murray, 1905. (Price 21s.)

Stow, George W., F.G.S., F.R.G.S.—The Native Races of South Africa. A history of the intrusion of the Hottentots and Bantu into the hunting grounds of the Bushmen, the aborigines of the country. Edited by George McCall Theal, Litt.D., LL.D. 8vo. London: Swan, Sonnenschein and Co., Ltd., 1905. (Price 21s.)

Mingard, W. Vere.—Round the World: Our Colonial Cousins, or Britain Beyond the Seas. 12mo, pp. 288. London: T. C. and E. C. Jack, 1905. (Price 1s. 6d.)

Hooker, Sir Joseph Dalton (K.C.S.I., C.B., M.D., D.C.L., F.R.S.).—Himalayan Journals, or Notes of a Naturalist in Bengal, the Sikkim, and Nepal Himalayas, the Khasa Mountains, &c. 8vo, pp. xxxi.-574. London: Ward Lock and Co., 1905. (Price 6s.)

Lyne, Robert Nunez (F.L.S., F.R.G.S.).—Zanzibar in Contemporary Times: a Short History of the Southern East in the Nineteenth Century. 8vo, pp. xii.-328. London: Hurst and Blackett, 1905. (Price 10s. 6d.)

Hopkins, J. Castell (F.S.S.).—The Canadian Annual Review of Public Affairs, 1904. 8vo, pp. xxi.-630. Toronto: Annual Review Publishing Co. (Price 12s. 6d.)

Bell, W. H. Somerset, and Nathan, Manfred (LL.D.).—The Legal Handbook of Practical Laws and Procedure, together with Tariffs of Fees of Office and Stamps in British South Africa, together with a Law List, 1905. 8vo, pp. xiv-891. Grahamstown: African Book Co. (Price 25s.)

Broomhead, J. W.—Round the Rand. Sm. 4to, pp. 100. London: *Financial Times* Office, 1905. (Price 2s. 6d.)

King, W. J. Harding (M.R.A.S., F.R.G.S.).—A Search for the Masked Tawareks. 8vo, pp. viii.-334. London: Smith, Elder and Co, 1903. (Price 6s.)

Morgan, Henry J., and Burpee, Lawrence J.—Canadian Life in Town and Country. 12mo, pp. xii.-267. London: George Newnes, Ltd., 1905. (Price 3s. 6d.)

Raja Binaya Krishna Deb.—The Early History and Growth of Calcutta. Sm. 4to, pp. 280. Calcutta: Romesh Chandra Ghose, 1905. (Price 7s. 6d.)

The Oxford Atlas of the British Colonies.—Part I. British Africa. 4to. Oxford: William Stanford and Co., 1905. (Price 2s. 6d.)

Harding, Colonel Colin (C.M.G., F.R.G.S.).—In Remotest Barotseland, being an Account of a Journey of over 8,000 miles through the wildest and remotest parts of Lewanika's Empire. 8vo, pp. xv.-413. London: Hurst and Blackett, 1905. (Price 10s. 6d.)

Fisher, Ruth B.—On the Borders of Pigmy Land. 8vo, pp. ix.-215. London: Marshall Brothers, 1905. (Price 3s. 6d.)

Lawson, Sir Charles.—Memories of Madras. 8vo, pp. xiii.-313. London: Swan Sonnenschein and Co., 1905. (Price 10s. 6d.)

Hill, J. G.—The Calvert Scientific Exploring Expedition (Australia, 1896). Sm. 4to, pp. viii.-44. London: George Philip and Son, 1905. (Price 2s.)

The Bahama Islands.—Edited by George Burbank Shattuck, Ph.D. Royal 8vo, pp. 630. New York: The Macmillan Co., 1905.

Pullen-Burry, B.—Ethiopia in Exile, Jamaica Revisited. 12mo, pp. 288. London: T. Fisher Unwin, 1905. (Price 6s.)

Patel, J. M. Framjee.—Stray Thoughts on Indian Cricket. 8vo, pp. xvi.-175. Bombay: The *Times* Press, 1905. (Price 9s. 6d.)

Grant, William Lawson, and Hamilton, Frederick.—George Munro Grant. 8vo, pp. 531. Edinburgh: T. C. and E. C. Jack. Toronto: Morang and Co., 1905. (Price 12s. 6d.)

New Instruments, &c.

TWO NEW MICROSCOPE OBJECT GLASSES.—R. and J. Beck, Ltd., 68, Cornhill, London, E.C., have just brought to our notice two useful lenses.

[$\frac{2}{3}$ *inch* 16 *mm. focus*, 32°., *price* 15s.]

Our present Series A $\frac{2}{3}$ inch object glass has an aperture of 17°, and whilst such a low aperture gives extra penetration or depth, we have brought out the new lens with the large aperture of 32° as being more suitable for flat sections. It has greater resolving power and flatness of field than the present Series A $\frac{2}{3}$ inch, and is recommended except where great penetration is required.

[$\frac{1}{6}$ *inch* 4 *mm. focus*, 110°, *price* £1 10s.]

Our present Series A $\frac{1}{6}$ inch has an angle of 90°, and the new lens gives greater resolving power, but less penetration. The resolving power of our present lens has been generally considered adequate for histological work, but there is a growing tendency towards wider-angle lenses.

COLONIAL CIVIL SERVICE.

MR. HENRY B. WALCOTT, Treasurer and Collector of Customs of British Honduras, is acting as Colonial Secretary of that Colony in place of the Hon. H. E. W. Grant, who has left Belize on promotion to the Colonial Secretaryship of the Falkland Islands. Mr. Walcott will continue to perform the duties of his substantive office in addition to those of Colonial Secretary.

Mr. L. W. Booth has been appointed District Judge, Commissioner of Requests, and Police Magistrate at Batticaloa, Ceylon. He has been in the Ceylon Civil Service for twenty-seven years, and has served in all parts of the Colony. Prior to proceeding on leave last year he was the Government Agent for the North Central Province.

Mr. Laurence Macrae is to succeed Mr. Neil F. Mackay as Private Secretary to the Premier of British Columbia and Assistant to the Statistician of that Province of the Dominion.

Lieutenant A. J. R. Dewar, of the Malay States Guides, has been selected for the office of an Assistant Superintendent of Police under the Government of the Straits Settlements.

Dr. A. R. Wellington has proceeded to Sarawak as an Assistant Medical Officer. He was formerly Assis-

tant Medical Officer of the Kensington Infirmary, which office he recently resigned.

Mr. Eric Maxwell becomes a member of the Council of the State of Perak, Federated Malay States, during the absence on leave of Mr. Francis D. Osborne for twelve months.

Mr. Stanley Fisher, President of the District Court, Kyrenia, Cyprus, is coming to England on leave of absence, during which his duties will be performed by Mr. J. C. Macaskie, President of the Famagusta District Court.

Mr. W. E. U. Grove has resumed the duties of Superintendent of Police, Malacca, Straits Settlements, and is also acting as Harbour Master and Conservator of the Port of Malacca in addition to his other duties.

Mr. R. M. Little, Resident of Kudat, British North Borneo, will leave England early in January to resume duty after leave of absence.

Mr. W. L. Kindersley, late Assistant Government Agent, Trincomalee, Ceylon, has taken over the duties of Assistant at Chilaw to the Government Agent of the North-West Province.

Mr. F. G. Stevens, who was formerly connected with the Straits Civil Service, which he entered as a cadet in the year 1902, has been made a magistrate of the first class for the District of Raub, Federated Malay States.

Mr. H. A. Adams is acting as Superintendent of the Public Works Department, Sarawak.

Sir Alfred Sharpe, K.C.M.G., C.B., Commissioner of the British Central Africa Protectorate, leaves Marseilles on the 23rd instant on his return to duty.

The Governorship of British Honduras will probably become vacant at an early date, as Sir Bickham Sweet-Escott, K.C.M.G., who has been granted an extension of leave until the end of February, is not expected to return to the Colony.

Mr. P. J. Sproule is acting as Deputy Public Prosecutor, Singapore, in consequence of the transfer of Mr. W. L. Woodward to one of the newly created judgeships in the Federated Malay States.

His Excellency E. P. Gueritz, who recently resigned the appointment of Governor of British North Borneo, has withdrawn his resignation, and is administering the Government.

A proposal is to be submitted to the Ceylon Legislative Council, with the approval and consent of the Secretary of State, for the increase of the salaries of all classes of the Civil Service of Ceylon, at a total cost to the Colony of Rs. 500,000 per annum. The subject has engaged the attention of the Secretary of State and the Governor of the Colony for the past two years, and it is expected that the scheme will partly come into force on January 1st.

Dr. J. W. Farndale has been appointed District Surgeon of Mwomboshi, North-east Rhodesia, by the British South Africa Company. He sails before Christmas.

HOMBURG Salt, prepared from the water of the well-known Homburg Elizabeth Spring, is sent by Rüdiger and Co. (Homburg v. d. Hohe), in bottles for trial purposes. These are always at the disposal of the medical profession, and will be sent free of all charges.

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The proprietors have, indeed, already received satisfactory testimonials from medical men in the Tropics as to its efficacy in infantile diarrhœa and dysentery. In military campaigns also, and in the navy, this product will prove a boon, being pure, palatable and very portable. The "Defiance" brand of dried milk was put to a practical test recently in this connection, being the only milk supplied to the sailors and soldiers engaged in the Royal Naval and Military Tournament at the Agricultural Hall this year, and the P.M.O. in charge reported on it as "a valuable substitute for ordinary milk, handy, and hard to distinguish from boiled milk."

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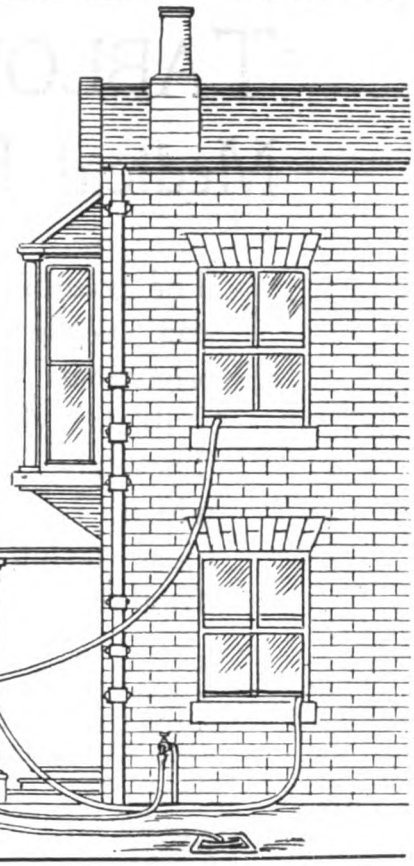
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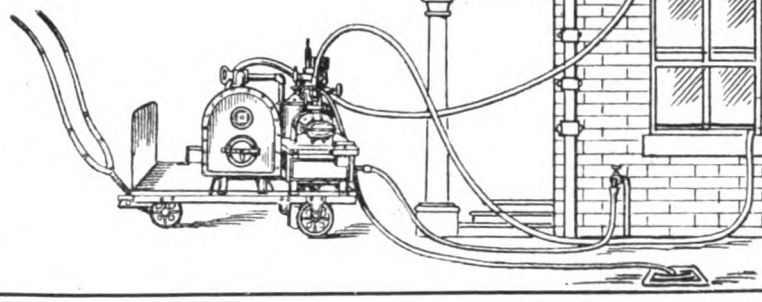


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